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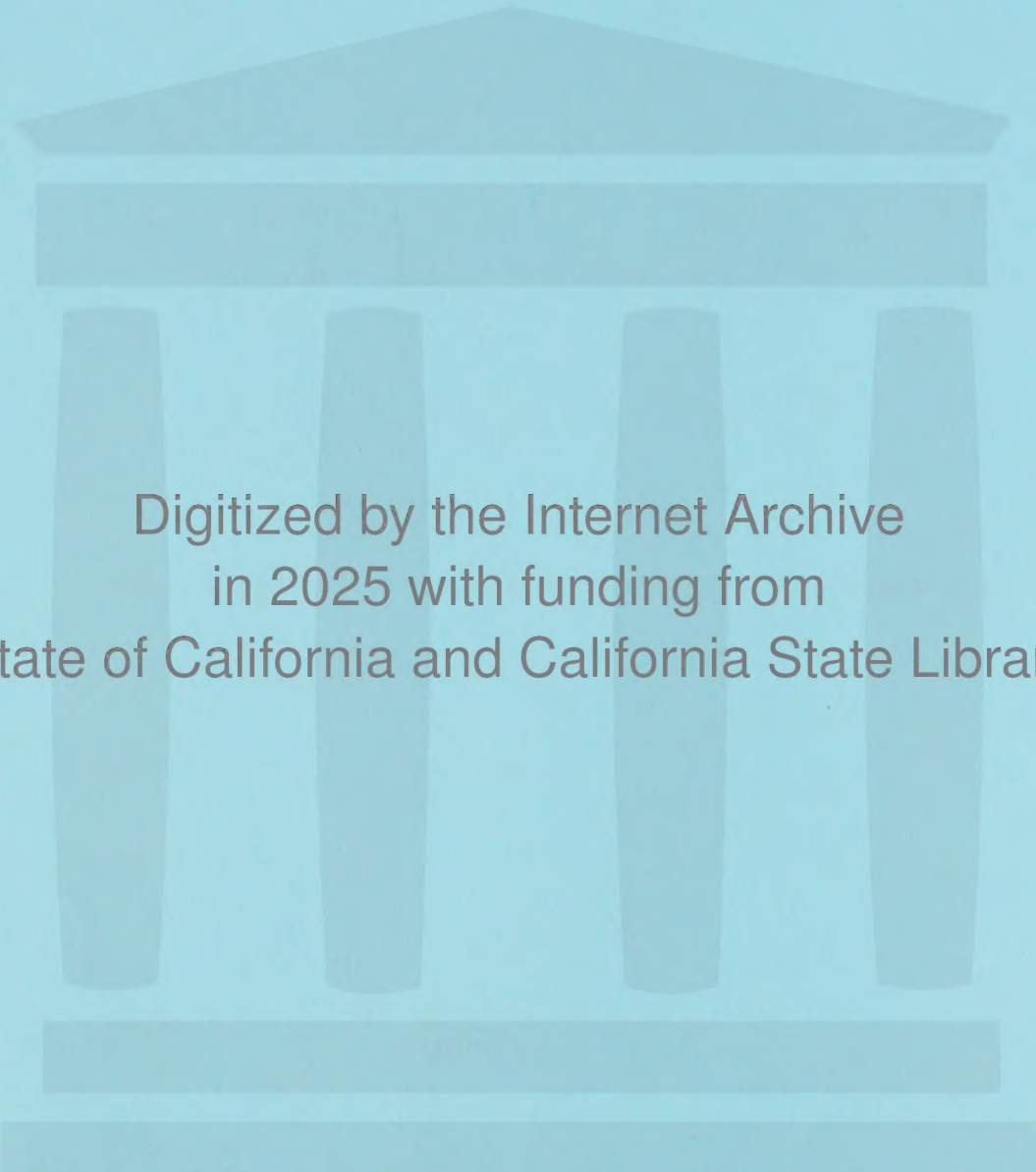
Chino General Plan

September 1995

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CITY OF CHINO

NOISE ELEMENT

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Chino General Plan

September 1995

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September, 1995

CITY OF CHINO

NOISE ELEMENT

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September, 1995

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Background

Introduction

A. Purpose and Applicability

The purpose of the Noise Element is to define the City's role and responsibility in safeguarding against noise pollution. The Noise Element of the Chino General Plan is a comprehensive program for including noise control in the planning process. It is a tool for local planners to use in achieving and maintaining compatibility between land uses and environmental noise levels. The Noise Element identifies noise sensitive land uses and noise sources, and defines areas of noise impact for the purpose of developing programs to insure that residents of the City of Chino are protected from excessive noise intrusion.

B. Noise Environment

The City of Chino began as an agricultural town that has grown to become an important residential, commercial and industrial center. However, the City still has many large undeveloped agricultural areas that help to maintain the City's small town atmosphere. As a result, the residents have an expectation of a quiet living environment as in the City's undeveloped areas.

Within and around the City of Chino are a number of major transportation related noise sources. These noise sources (i.e., non-stationary) include freeways, major and secondary arterial streets, railroads, Chino Airport and Ontario International Airport. To a lesser extent, stationary sources, such as industrial and commercial centers, also impact the noise

environment. Assessing the City's noise environment and developing cost effective strategies to reduce non-stationary noise sources within the community is an essential part of the Noise Element.

Information relative to the existing and future noise environment within Chino should be integrated into future land use planning decisions. The Noise Element presents the noise environment in order that the City can include noise impact mitigation in development projects.

Residential land uses, and other areas identified as noise sensitive, must be protected from excessive noise created by stationary noise sources. The impacts of stationary noise sources are most effectively controlled through the enforcement and application of the City's community noise ordinance.

C. Statutory Authority

The Noise Element is consistent with the State General Plan Guidelines as enumerated in Government Code Section 65302(f) and Section 46050.1 of the Health and Safety Code. The Noise Element quantifies the community noise environment in terms of noise exposure contours for both existing and future levels of growth and traffic activity. The information contained in the Element provides the framework to achieve compatibility with land uses and provides baseline levels and noise source identification for local noise ordinance enforcement.

D. Organization of the Element

The Element is divided into four sections, including the Appendix. The Noise Element is organized as follows:

1. Background Section - This section is made up of three subsections: Introduction, Technical Information and Issues Analysis. The Introduction will help the reader understand the Noise Element and to give a frame of reference for the technical information and issues analysis subsections. The Technical Information consists of pertinent facts which are needed to support the goals, policies and actions. The Issues Analysis consists of concerns (i.e. public, staff or community perceptions) which are not factual, but directly relevant to the topic of noise.

2. Goals, Policies and Actions - This section defines the goals established for the Noise Element which are derived from the Background Section. The policies and actions define and summarize the programs to be implemented by the City to achieve the desired goals.

3. Implementation Section - This section provides strategies to reduce the impacts of noise on the resident of the City of Chino.

4. Technical Appendix - This section contains detailed information on noise, health effects of noise, methodology, measurement and modeling results. A glossary of terms, bibliography and a list of references are also included in this section.

E. Relationship to Other Elements

The Land Use and Circulation Elements of the Chino General Plan will particularly affect the implementation of the Noise Element. The Land Use Element designates land uses through-out the City and establishes goals and policies for land development. The Circulation Element establishes goals and policies for transportation related issues.

The goals and policies contained in other General Plan Elements will affect the quality of life that Chino residents enjoy. The remaining Elements have been reviewed during the preparation of the Noise Element and the goals, policies and actions in this Element reflect the policy direction contained in the rest of the Chino General Plan.

General Information on Noise

A. Background

The Technical Appendix of the Noise Element contains a detailed description of noise metrics and noise criteria used in community noise assessment. The following paragraphs discuss some of the noise metrics use in this study.

Sound is technically described in terms of the loudness (i.e., amplitude) of the sound and the pitch (i.e., frequency) of the sound. The standard unit of measurement of the loudness of sound is the Decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been created to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Decibels are based on a logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more useable range of numbers in a manner similar to the way the Richter scale is used to measure the intensity of earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is judged to be twice as loud, and 20 dBA higher is judged to be four times as loud. Everyday sounds normally range from 30 dB (very quiet) to 100 dB (very loud).

Community noise is generally not a steady state and varies with time. Under conditions of non-steady state noise, some type of statistical metric is necessary in order to quantify noise exposure over a long period of time. Several rating scales have been developed for describing the effects

of noise on people. They are designed to account for the known effects of noise on people that are discussed in the Appendix.

A common scale used in community noise assessments is the Day Night Noise Level (LDN). LDN is a 24-hour, time weighted annual average noise level. Time-weighted refers to the fact that noise which occurs during certain sensitive time periods is penalized for occurring at these times. In the LDN scale, those events that take place during the nighttime (10 pm to 7 am) are penalized by 10 dB. This penalty was selected to attempt to account for increased human sensitivity to noise during the quieter period of a day, when ambient noise is at its lowest and sleep is the most probable activity.

Extensive research has been conducted on human responses to exposure of different noise levels. Community opposition resulting from noise generally occurs at the 65 LDN level or higher. Intermittent or occasional noise (e.g., that associated with stationary noise sources) is not of sufficient volume to exceed community noise standards that are based on a time averaged scale such as the LDN scale. To account for intermittent noise, the Percent Noise Level (L(n)) method can be used.

The Percent Noise Levels the level exceeded "n" percent of the time during the measurement period. Noise ordinances are typically specified in terms of the percent noise level and are designed to protect people from non-transportation noise sources such as loud music, machinery and vehicular traffic.

B. Noise Sources

As previously stated, Chino is located near several major transportation noise sources. However, the City is unique in that its large open areas help to create low ambient noise levels. With the exception of neighborhoods close to the freeways, major arterials and the Ontario Airport, the noise environment is indicative of a quiet urban environment. The predominant noise sources in the City, as in other cities, are mobile, or non-stationary sources. These include motor vehicles, trains and aircraft. The areas most impacted by these sources are those directly adjacent to them.

Freeways and arterial streets also create significant noise impacts. The Pomona (SR60) and the Chino Valley (SR71) Freeways are two examples. Arterial streets causing significant noise impacts in the City include the following streets:

Phillips Boulevard, Francis Avenue, Philadelphia Street, Walnut Avenue, Riverside Drive, Chino Avenue, Schaefer Avenue, Edison Avenue, Eucalyptus Avenue, Chino Hills Parkway, Reservoir Street, East End Avenue, Pipeline Avenue, Ramona Avenue, Monte Vista Avenue, Central Avenue, Benson Avenue, Mountain Avenue, San Antonio Avenue, and Euclid Avenue.

Air traffic from Ontario International and Chino Airports, and other aircraft overflights, currently, and will continue, to impact the City. Other noise sources that impact the City come from the Southern Pacific Railroad lines and industrial, agricultural and commercial developments. To a lesser degree, noise impacts result from construction and human activity.

C. Noise Sensitive Uses

Noise affects all types of land uses, although some land uses are more sensitive to high noise levels than others. Land uses in the City of Chino identified as noise sensitive include residences, hospitals, rest homes, convalescent hospitals, churches and schools. The areas in the City most impacted by high noise are the residences along the Pomona and Chino Valley Freeways. This is especially true when the freeway is elevated above grade such as the area adjacent to the Pomona Freeway between Benson and Fern Avenues.

Noise emanating from an elevated freeway is much harder to mitigate than if it were level or below grade (most of the Pomona Freeway through the City is below grade). Common mitigation used to reduce noise associated with an above grade freeway is the sound attenuation wall.

D. Noise Levels

The 65 LDN is the noise level commonly determined by government agencies as excessive. Agencies such as the City of Los Angeles, City of Irvine, Los Angeles County, Orange and Riverside Counties utilize 65 LDN as a noise limit for outdoor living areas associated with new residential uses.

It is evident that some residential neighborhoods in the City are exposed to roadway noise levels that exceed 65 LDN. This will only increase in the future as new residential development increases. The construction of new residential neighborhoods inevitably results in increased traffic volumes which in turn increase noise levels. Attention should be given to mitigating

noise impacts upon existing and future residences exposed to excessive noise levels.

E. Noise Contours

The noise environment for the City of Chino is best described by using noise contours created by major noise sources. The future noise contour conditions are outlined in Exhibit VI-2. The existing noise contour conditions for 1988 are outlined in Exhibit VI-1. The noise contours are available at 1" = 2,000' scale (see maps attached to the Noise Element). The 60 dB and 65 dB LDN contour levels are shown on these maps. The 60 dB LDN contour represents the Noise Referral Zone in which a proposed noise sensitive land use should be evaluated for noise impacts, and if necessary, mitigate these impacts.

Meeting the requirements of Title 24, the California Noise Insulation Standards, is one way to mitigate potential noise impacts. The 65 LDN contour also represents the level at which new residential development must be mitigated to comply with City standards.

F. Physical Noise Barriers

State and Federal agencies have the responsibility to control vehicle transportation noise. A city, on the other hand, has little direct control of transportation noise. Thus, the most effective method available to Chino for mitigating the impacts of transportation noise on the community is by using noise barriers, such as sound walls and/or berms. The mitigating effects of how a noise barrier can reduce noise is illustrated in Exhibit VI-3.

The effectiveness of a noise barrier is critically dependent on the distance between the noise

source and the receiver. Noise is effectively mitigated when the "line of site" between the source and receiver absorbs, or deflects, the noise away from the receiver. For example, the physical make-up of a building can act as effective insulation from exterior noise. The more noise that is absorbed by the building the greater the noise reduction (refer to Exhibit VI-3).

G. Land Use Planning

Noise mitigation measures should be incorporated into the land use planning process to help minimize noise and land use incompatibilities. This can be achieved by establishing standards and criteria for various land uses that specify acceptable noise limits. The criteria is designed to integrate noise mitigation early in the land use planning process to prevent possible conflicts. Exhibit VI-4 outlines the Land Use Noise Compatibility Matrix which serves as a guide to mitigating noise impacts upon land uses. The criteria illustrated in Exhibit VI-4 provides a basis for developing specific noise standards. Exhibit VI-5 outlines specific interior and exterior noise standards which establish acceptable noise levels. These two exhibits serve as tools to help ensure compatibility between land uses and outdoor noise.

H. Noise Standards

The most effective way to control community noise impacts from all noise sources is through implementation of a community noise ordinance. A noise ordinance is designed to protect sensitive land uses from the noise impacts created by stationary noise sources and transportation noise sources. The goal of a noise ordinance is to create a quiet noise environment for residential neighborhoods.

Inventory of Existing and Future Noise Conditions

A. Background

This subsection contains a detailed description of the existing and future noise environment for the City of Chino. The information contained in this section is based upon the identification of noise sources and noise sensitive land uses. It also includes a community noise measurement survey and noise contour maps.

To define the noise exposure, identification of major and secondary noise sources which contribute to the existing noise environment must be made. The major noise sources affecting Chino include the Pomona and Chino Valley Freeways, the Southern Pacific railroad lines, major and secondary arterial streets, the Chino Airport and the Ontario International Airport. Other major noise sources can be found in the commercial and industrial areas of the City. Secondary noise sources affecting Chino are common everyday events such as car alarms, barking dogs, lawnmowers, leaf blowers, boom boxes (i.e. radios), construction, birds and people.

To completely assess the noise environment in the City, noise sensitive receptors must be identified. As mandated by state law, noise sensitive receptors include, but are not limited to, residential neighborhoods, schools, hospitals, rest homes, medical care facilities (short and long term) and other land uses approved by the local jurisdiction.

Based upon the major and secondary noise sources and the location of sensitive receptors, a noise measurement survey was conducted.

The purpose of the survey was threefold: 1) to determine the existing noise levels at specific noise sensitive land use areas; 2) to provide empirical data for the correlation and validation of the computer modeled noise environment; and 3) to obtain an accurate description of the ambient noise levels in various neighborhoods throughout the City. The Technical Appendix to the Noise Element provides a complete description of a series of comprehensive noise measurements made throughout the City.

Noise contours for the major noise sources in the City were developed for existing and future conditions. Traffic levels were used to determine noise contours for roadway noise sources. The contours are expressed in terms of the Day Night Noise Levels (LDN). The existing conditions outline was developed from 1988 traffic levels and the environmental conditions thereof. These levels have been reviewed for accuracy and remain germane to current and future conditions. Future traffic conditions is presented for a 20 year period to 2010.

B. Sources of Noise

The most common sources of noise in urban areas are transportation related. These include automobiles, trucks, motorcycles, trains and aircraft. Motor vehicle noise is of concern because it is characterized by a high number of individual events which often create a sustainable noise level. It is of special concern due to its proximity to noise sensitive areas. Train operations may impact neighborhoods that are located along railroad lines. Helicopter and fixed wing aircraft operations, although infrequent, may generate noise levels disruptive to human activity.

Stationary noise sources, although not as common as transportation noise sources, also create noise in urban areas. These sources include, but are not limited to, manufacturing plants in the industrial area and office buildings/shopping centers in commercial zones.

C. Significant Noise Sources

The most significant noise sources effecting Chino are the Pomona (SR 60) and Chino Valley (SR 71) Freeways. The noise levels adjacent to the freeways often exceed the 70 LDN mark. Other significant noise sources are the major and secondary arterial streets in the City. They include: Phillips Boulevard, Francis Avenue, Philadelphia Street, Walnut Avenue, Riverside Drive, Chino Avenue, Schaefer Avenue, Edison Avenue, Eucalyptus Avenue, Chino Hills Parkway, Reservoir Street, East End Avenue, Pipeline Avenue, Ramona Avenue, Monte Vista Avenue, Central Avenue, Benson Avenue, Mountain Avenue, San Antonio Avenue, and Euclid Avenue. The noise levels along these streets range between 60 and 70 dBA. As one moves further away from the streets into the neighborhoods, the noise levels decrease significantly.

Land uses along these arterial streets which are subjected to 65 dBA or greater are deemed to be exposed to excessive noise levels. The most sensitive land uses near the major and secondary arterials include residences, schools, churches, and hospitals. Some commercial land uses within the 70 dBA contours along arterial streets are also exposed to significant noise levels.

The Chino Airport is also considered a significant noise source. Aircraft overflight activity impacts the southeastern portion of the City. However,

there are no noise sensitive land uses directly adjacent to the airport. Other significant noise sources include the industrial and commercial areas of the City. The commercial centers are mainly located along Riverside Drive, Euclid Avenue, Central Avenue, Philadelphia Street and Walnut Avenues. Most industrial centers are located in the southern portion of the City.

D. Noise Sensitive Receptors

The primary uses most sensitive to noise in Chino, as in other cities, are residential uses. The City has a number of public and private educational facilities, hospitals and other facilities that are also considered noise sensitive. The distribution of the uses vary from quiet rural neighborhoods to neighborhoods that are noisy due to their proximity to the freeways.

E. Community Noise Contours

The traffic noise contours for the City are shown in Exhibit VI-1 for 1988 and continuing conditions and in Exhibit VI-2 for the future 2010 conditions. The noise contours for impacts resulting from the Chino and Ontario International Airports are illustrated in Exhibits 3 and 4 of the Technical Appendix. These contours are based on existing and future traffic volumes and aircraft operations data. The methodology for computing the contours is discussed in the Technical Appendix.

Noise contours represent lines of equal noise exposure similar to the lines on a topographic map show lines of equal elevation. The contours shown on the maps are the 60 dB and 65 dB LDN noise level. These noise contours should be used as a guide in making land use planning decisions. The 60 dB LDN contour defines the Noise Referral Zone. This is the noise level for

which noise mitigation should be included in development projects. The 65 dB LDN contour describes the area for which new noise sensitive developments should incorporate mitigation measures consistent with the standards outlined in the Noise Element. New residential developments would, of course, not be permitted inside the aircraft-generated 65 dB LDN contour, contained within the boundaries of the California Institution for Men.

The reason for imposing this restriction is that it is very difficult to mitigate against aircraft noise. The contours presented in the Noise Element are graphic representations of the noise environment. The distances between contour values for the roadways are also shown in Table A-1 (existing conditions) and Table A-2 (future conditions) of the Technical Appendix.

F. Summary of Noise Exposure

Noise sources in the City of Chino can be divided into two basic categories: 1) stationary noise sources and 2) non-stationary noise sources. In this section, the non-stationary noise sources are further reduced to four subcategories: freeways, major/secondary arterial streets, aircraft and railroad sources. The impacts from stationary sources and non-stationary sources are summarized as follows:

Freeways - The major noise sources in the City of Chino will continue to be the Pomona (SR60) and Chino Valley (SR 71) Freeways. Land uses most impacted by the high noise levels of the freeways include residential, commercial, industrial and open space.

Major/Secondary Arterial Roadways - Traffic noise on surface streets are significant noise sources in the Community. These roadways are

as follows: Phillips Boulevard, Francis Avenue, Philadelphia Street, Walnut Avenue, Riverside Drive, Chino Avenue, Schaefer Avenue, Edison Avenue, Eucalyptus Avenue, Chino Hills Parkway, Reservoir Street, East End Avenue, Pipeline Avenue, Ramona Avenue, Monte Vista Avenue, Central Avenue, Benson Avenue, Mountain Avenue, San Antonio Avenue, and Euclid Avenue.

Aircraft Operations - Aircraft noise is also a major noise source in the City. The 65 LDN noise contours from Ontario International Airport do not extend into the City. However, noise from aircraft overflights is sufficient to cause significant single event disturbances. To help mitigate these noise impacts, Ontario Airport must comply with the requirements of the FAA mandated Part 150 noise and land use compatibility study. The Noise Compatibility Program Report was published on May 9, 1990. Existing noise contours for Ontario Airport are illustrated in Exhibit VI-6.

Chino Airport, which operates small piston fixed wing aircraft, has some military aircraft and helicopters. Information for Chino Airport was obtained from the "Master Plan Update Economic Land Use Study" (November, 1986) and the Airport "Comprehensive Land Use Plan" (November, 1991). Chino Airport's 65 LDN contour does extend into the City (there is no 60 LDN contour). The future contour lines will change shape but will not be significantly larger. The projected 2005 airport CNEL contours are illustrated in Exhibit VI-7. Policies regarding aircraft noise are outlined in the Goals, Policies and Actions chapter.

Railroads - The Southern Pacific drill line enters northwest Chino near Reservoir Street and diagonally crosses the City in a south-easterly

direction to Chino Avenue. The drill line operates one (1) freight train per day. The Circulation Element of the Chino General Plan proposes that a portion of the drill line from Monte Vista Avenue to Benson Avenue be abandoned. There are four spur lines extending from the main drill line into the City's industrial area. These spur lines are used mainly by local businesses. The data on train operations was obtained from the City of Chino Circulation Element (November, 1991).

The railroad noise levels in the City are projected to be insignificant due to a very low number of train trips. The noise levels are projected to be less than 60 LDN and will not significantly impact residential land uses along the railroad lines.

Stationary Sources - There are many stationary noise sources throughout the City. The most significant sources include commercial and industrial centers and major business projects. Noise from these sources are caused by mechanical equipment, air compressors, generators, truck refrigeration motors, outdoor loud speakers (i.e., paging systems), railroad deliveries and construction activity.

Other areas that cause noise impacts upon the community are the agricultural areas located throughout the City. These areas tend to be surrounded by residential land uses and other sensitive uses. Sources of noise from agricultural uses include animals, farm equipment and other mechanical equipment.

Issues Analysis

A. Issues Specific to the City Chino

The City of Chino is strongly concerned about the impacts of noise on the health, safety and general welfare of its residents. There are many sensitive land uses in the City that require a quiet noise environment. Such uses include residential neighborhoods, hospitals and schools. These areas are especially susceptible to noise impacts because of their proximity to freeways and major arterial roadways. In addition, the Chino and Ontario Airports cause significant noise impacts.

Other parts of the City are more sensitive to noise because they already have a quieter ambient noise environment, such as farms and open spaces. These areas have a rural setting and are typically quieter than most urban areas.

It is recognized that in a high-density urban area, the general population noise is higher than in low-density rural environments. The greater the number of persons live near each other, the greater the overall noise level. The City of Chino generally follows this trend with higher density areas experiencing higher ambient noise levels than lower density areas.

Goals, Policies and Actions

The following are goals, policies and actions the City of Chino desires for the guidance and control of community noise within the City of Chino.

GOAL G6-1

Protect Public Health, Safety & Welfare

Protect the public health, safety and general welfare by eliminating existing noise problems and by preventing significant degradation of the future acoustic environment through the establishment of standards that specify acceptable limits of noise for land uses throughout the City.

POLICY P6-1.1

Noise and Land Use Planning Integration

Incorporate community noise considerations into the land use planning process that will help prevent future noise and land use incompatibilities.

ACTION A6-1.1.1

Noise Limits on Various Land Uses

Establish acceptable limits of noise for various land uses throughout the City. The criteria is designed to fully integrate noise mitigation into land use planning to prevent noise and land use conflicts and to provide a basis for the development of specific noise standards.

The standards, presented in Exhibits VI-4 and VI-5, define the City policies related to land uses and acceptable noise levels. These tables are the primary tools which allow the City to ensure noise integrated planning for compatibility between land uses and outdoor noise (sources

on private property would be subject to the noise ordinance requirements).

ACTION A6-1.1.2

Noise Impact Evaluation

The City shall require a noise impact study to evaluate the impacts of projects that may exceed the 65 LDN contours as part of the design review process to determine if unacceptable noise levels will be created or experienced. Should noise mitigation be necessary, the City shall require the implementation of mitigation measures based on the detailed technical study prepared by a qualified acoustical engineer (i.e., a Registered Professional Engineer in the State of California).

ACTION A6-1.1.3

Mitigate Projects

The City shall only approve projects which comply with adopted noise standards, or meet the provisions of the California Environmental Quality Act (CEQA).

ACTION A6-1.1.4

Noise Element Review

The City should review the Noise Element every five (5) years to identify progress in achieving noise abatement objectives and to prepare applicable revisions to address new community issues and concerns.

ACTION A6-1.1.5

Noise Guidelines

The City shall establish guidelines for purchasing equipment/fixtures that meet federal noise labeling regulations and requirements.

ACTION A6-1.1.6**Coordinate Land Use Developments Near Airports**

New development near Chino and Ontario Airports must comply with the Airport Commission Land Use Plan (ACLUP). The City of Chino's development policies should be consistent with the ACLUP. The implementation strategy set forth in Action A6-1.1.1, with respect to exterior and interior noise level standards, should also be applied to residential projects located near these airports.

POLICY P6-1.2**Reduce Noise Impacts from Transportation Noise Sources**

Reduce noise impacts on the community from transportation related systems by reducing noise at the source. This is the most efficient and effective means of controlling noise; however, the City has little direct control over source noise levels because of State and Federal Preemption regulations. Therefore, cooperative efforts with the State and Federal agencies is essential.

ACTION A6-1.2.1**Noise Control for Motor Vehicles**

The City should, when appropriate and feasible, advocate for motor vehicle noise control requirements.

ACTION A6-1.2.2**Street Design and Traffic Control Measures**

Minimize potential transportation noise through street and right-of-way design (i.e. grade separation, sound walls, street location) coordination of routing, and other traffic control measures.

ACTION A6-1.2.3**Truck Movement and Routes**

The City shall continually evaluate truck movements and routes to provide effective separation from residential and/or other noise sensitive land uses and ensure consistency with the adopted Truck Travel Demand Management (TTDM) Plan.

ACTION A6-1.2.4**Mitigation Measures in New Roadway Designs**

The City shall require, when necessary, the inclusion of noise mitigation measures into the design of new roadway projects currently under consideration. These projects should be designed so adjacent land uses meet the noise policies/standards set forth in Action A6-1.1.1. Potential mitigation measures may include roadway alignment and noise barriers (i.e. sound attenuation walls).

ACTION A6-1.2.5**Sound Wall and Berm Designs**

Encourage the use of sound attenuation walls and berms in the design of residential and other noise sensitive land uses that are adjacent to major arterial streets. When noise sensitive uses are proposed in, or adjacent to, noise sources above 65 dBA, a noise study shall be prepared as outlined in Action A6-1.3.3.

ACTION A6-1.2.6**Site Plan Noise Reduction Features**

Incorporate noise reduction features for new developments during the site planning process that will mitigate potential noise impacts on noise sensitive land uses. The noise referral zone identified in Exhibit IV-2 can be used to identify locations of potential conflict. New development must implement appropriate mitigation measures contained in the Noise Element and community noise ordinance.

ACTION A6-1.2.7**Motor Vehicle Noise Standards**

Encourage the enforcement of and compliance with State motor vehicle noise standards for cars, trucks and motorcycles through coordination efforts between the California Highway Patrol and City of Chino Police Department.

POLICY P6-1.3**Establish Measures to Control Non-transportation Noise Impacts**

The City shall consider measures to control non-transportation (stationary) noise impacts upon the community.

ACTION A6-1.3.1**Adopt Community Noise Ordinance**

The City shall consider a comprehensive community noise ordinance to protect quiet residential neighborhoods and its residents from non-transportation related noise sources such as machinery, pumps, air conditioners, and truck traffic on private property. The noise ordinance will not apply to motor vehicle noise on public streets, but will apply to motor vehicle noise on private property.

ACTION A6-1.3.2**Compliance for New Commercial and Industrial Development**

The City shall require new commercial and industrial developments adjacent to existing residential neighborhoods to comply with the City's community noise ordinance.

ACTION A6-1.3.3**Require Acoustical Studies for New Residential Developments**

All new residential development projects proposed near transportation noise sources must prepare an acoustical study to ensure indoor noise levels will not exceed minimum

requirements of the City's community noise ordinance.

ACTION A6-1.3.4**Limit Hours of Construction**

The City shall continue to enforce limitations on the hours that construction activity can take place to help reduce construction related noise impacts. These limits as enumerated in the Chino Municipal Code are as follows:

DAYS	CONSTRUCTION HOURS
Monday - Saturday	7:00 AM to 7:00 PM
Sunday & Holidays	8:00 AM to 5:00 PM

ACTION A6-1.3.5**Compliance of Construction Activities with Noise Element**

Require construction activity to comply with the standards established in the Noise Element.

ACTION A6-1.3.6**Evaluate Construction Activities**

Evaluate new development projects for potential construction related noise impacts and implement necessary measures to minimize potential impacts.

POLICY P6-1.4**Enforcement of City, State and Federal Regulations**

The City shall encourage the effective enforcement of City, State and Federal noise level regulations.

ACTION A6-1.4.1**Coordination on Noise Abatement Between City Departments**

The City shall establish and maintain coordination between city departments involved in noise abatement. The implementation matrix

in the Noise Element identifies which department is responsible for implementation of the action items.

applied to all new residential dwelling units, hotels and motels.

ACTION A6-1.4.2

Respond to Noise Complaints

The City shall respond to noise complaints and noise nuisances in a timely manner.

ACTION A6-1.4.3

City Coordination with OSHA

The City shall coordinate with the California Occupational Safety and Health Administration (Cal-OSHA) to provide information on occupational noise requirements for businesses in the City.

ACTION A6-1.4.4

Enforce the City's Noise Ordinance

The City shall enforce the Community Noise Ordinance on all applicable public and private projects.

ACTION A6-1.4.5

Designate Noise Control Coordinator

The Planning Division shall act as the City's noise control coordinator to ensure noise enforcement.

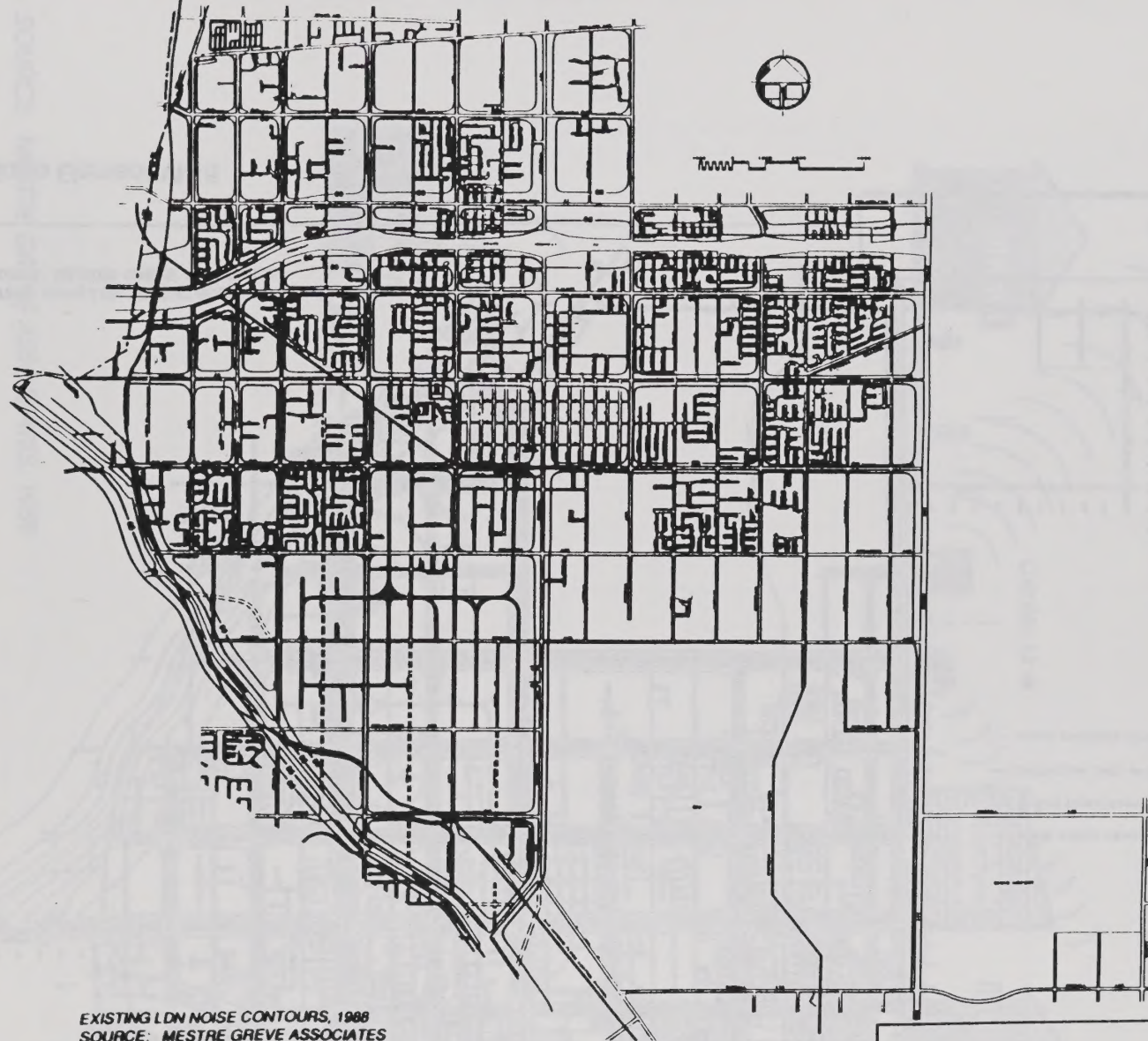
ACTION A6-1.4.6

Enforcement of the California Uniform Building Code (UBC)

The City shall enforce the California UBC for indoor noise levels, expect that the noise level for residential living spaces shall not exceed 40 dBA, CNEL or LDN.

The State requires implementation of this standard when the outdoor noise level exceeds 60 dBA, CNEL or LDN. The Noise Referral Zones (60 LDN) can be used to determine when this standard needs to be addressed and applied. The UBC also requires that this standard be

CITY OF CHINO



EXISTING LDN NOISE CONTOURS, 1988
SOURCE: MESTRE GREVE ASSOCIATES

Exhibit VI-1
Existing LDN Traffic Noise Contours

CITY OF CHINO

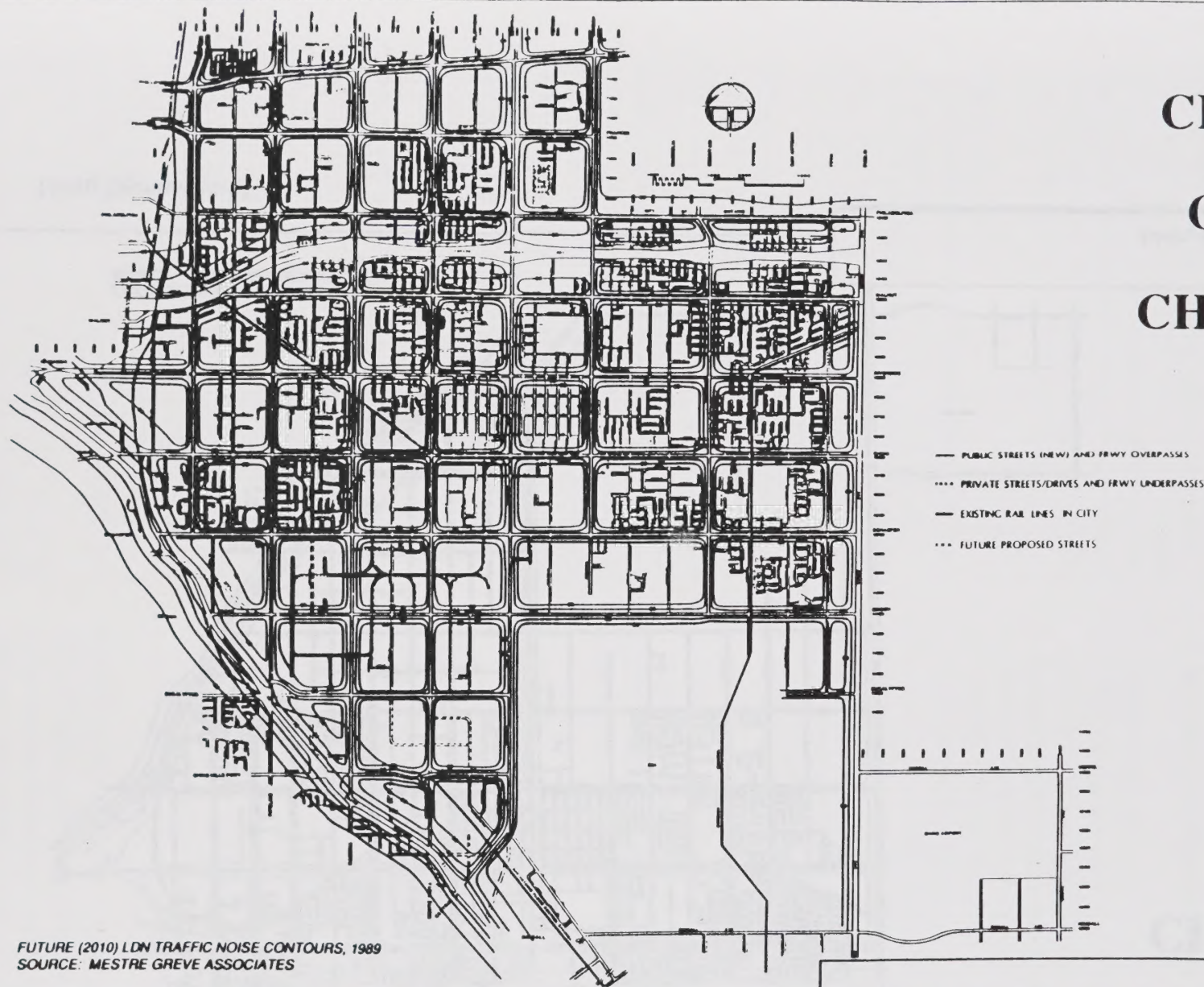
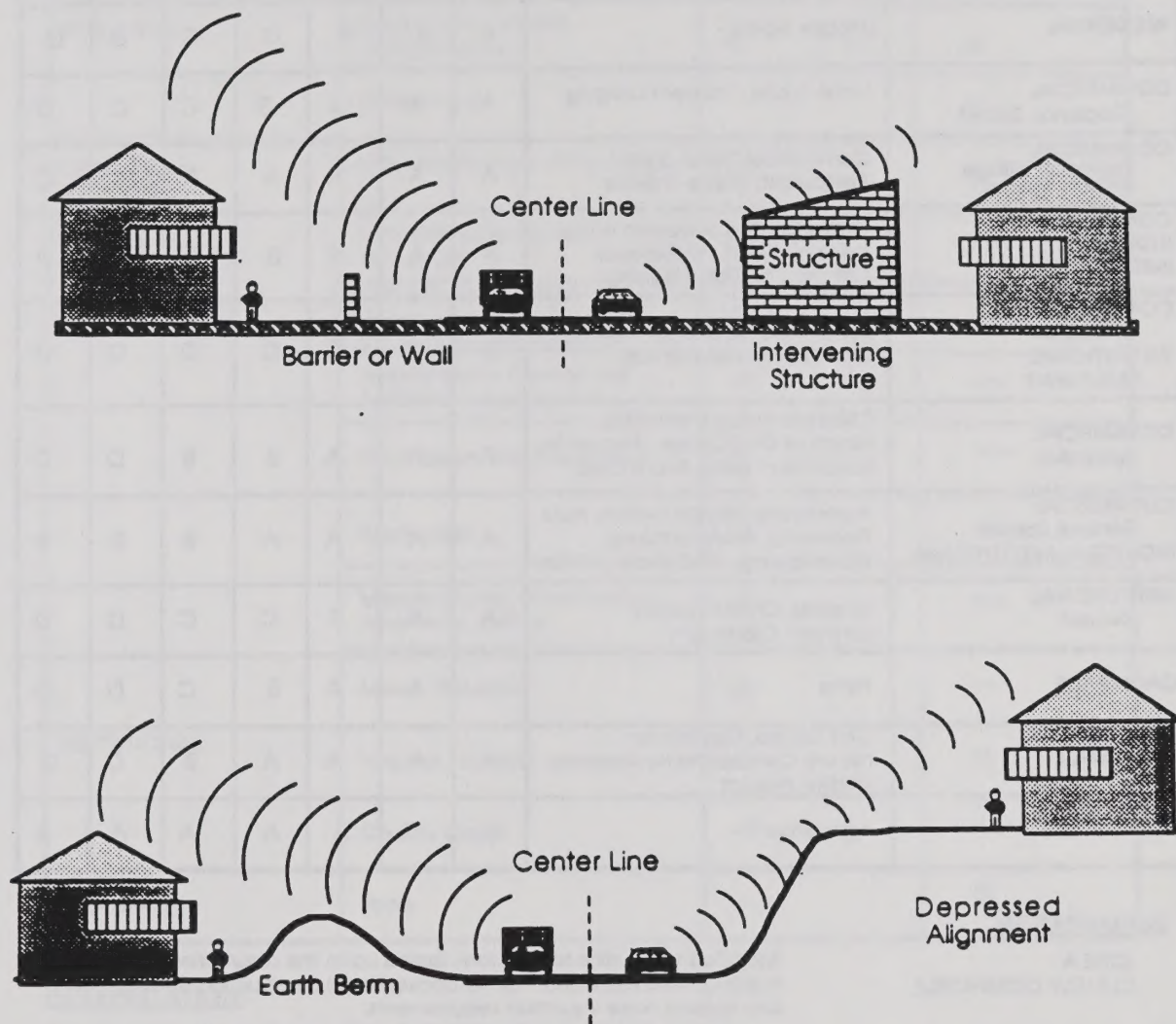


Exhibit VI-2

Future (2010) LDN Traffic Noise Contours



SOURCE: MESTRE GREVE ASSOCIATES, 1989

Exhibit VI-3

Noise Barrier Effect

LAND USE CATEGORIES		DAY NIGHT NOISE LEVELS LDN						
CATEGORIES	USES	<55	60	65	70	75	80	>
RESIDENTIAL	Single Family, Duplex, Multiple Family	A	A	B	B	C	D	D
RESIDENTIAL	Mobile Home	A	A	B	C	C	D	D
COMMERCIAL Regional, District	Hotel, Motel, Transient Lodging	A	A	B	B	C	C	D
COMMERCIAL Regional, Village District, Special	Commercial Retail, Bank Restaurant, Movie Theatre	A	A	A	A	B	B	C
COMMERCIAL INDUSTRIAL INSTITUTIONAL	Office Building, Research and Development, Professional Offices, City Office Building	A	A	A	B	B	C	D
COMMERCIAL Recreation INSTITUTIONAL Civic Center	Amphitheatre, Concert Hall Auditorium, Meeting Hall	B	B	C	C	D	D	D
COMMERCIAL Recreation	Childrens Amusement Park, Miniature Golf Course, Go-cart Trk, Equestrian Center, Sports Club	A	A	A	B	B	D	D
COMMERCIAL General, Special INDUSTRIAL, INSTITUTIONAL	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B
INSTITUTIONAL General	Hospital, Church, Library Schools' Classroom	A	A	B	C	C	D	D
OPEN SPACE	Parks	A	A	A	B	C	D	D
OPEN SPACE	Golf Course, Cemeteries, Nature Centers Wildlife Reserves, Wildlife Habitat	A	A	A	A	B	C	C
AGRICULTURE	Agriculture	A	A	A	A	A	A	A

INTERPRETATION

ZONE A
CLEARLY COMPATIBLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

ZONE B
NORMALLY COMPATIBLE

New construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.

ZONE C
NORMALLY INCOMPATIBLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.

ZONE D
CLEARLY INCOMPATIBLE

New construction or development should generally not be undertaken.

SOURCE: MESTRE GREVE ASSOCIATES, 1989

Exhibit VI-4

LAND USE CATEGORIES		ENERGY AVERAGE LDN	
<u>CATEGORIES</u>	<u>USES</u>	INTERIOR ¹	EXTERIOR ²
RESIDENTIAL	Single Family, Duplex, Multiple Family	45 ³ 55 ⁴	65
	Mobile Home	---	65 ⁵
COMMERCIAL INDUSTRIAL INSTITUTIONAL	Hotel, Motel, Transient Lodging	45	65 ⁶
	Commercial Retail, Bank Restaurant	55	---
	Office Building, Research and Development, Professional Offices, City Office Building	50	---
	Amphitheatre, Concert Hall Auditorium, Meeting Hall	45	---
	Gymnasium (Multipurpose)	50	---
	Sports Club	55	---
	Manufacturing, Warehousing, Wholesale, Utilities	65	---
	Movie Theatres	45	---
INSTITUTIONAL	Hospital, Schools' classroom	45	65
	Church, Library	45	---
OPEN SPACE	Parks	---	65

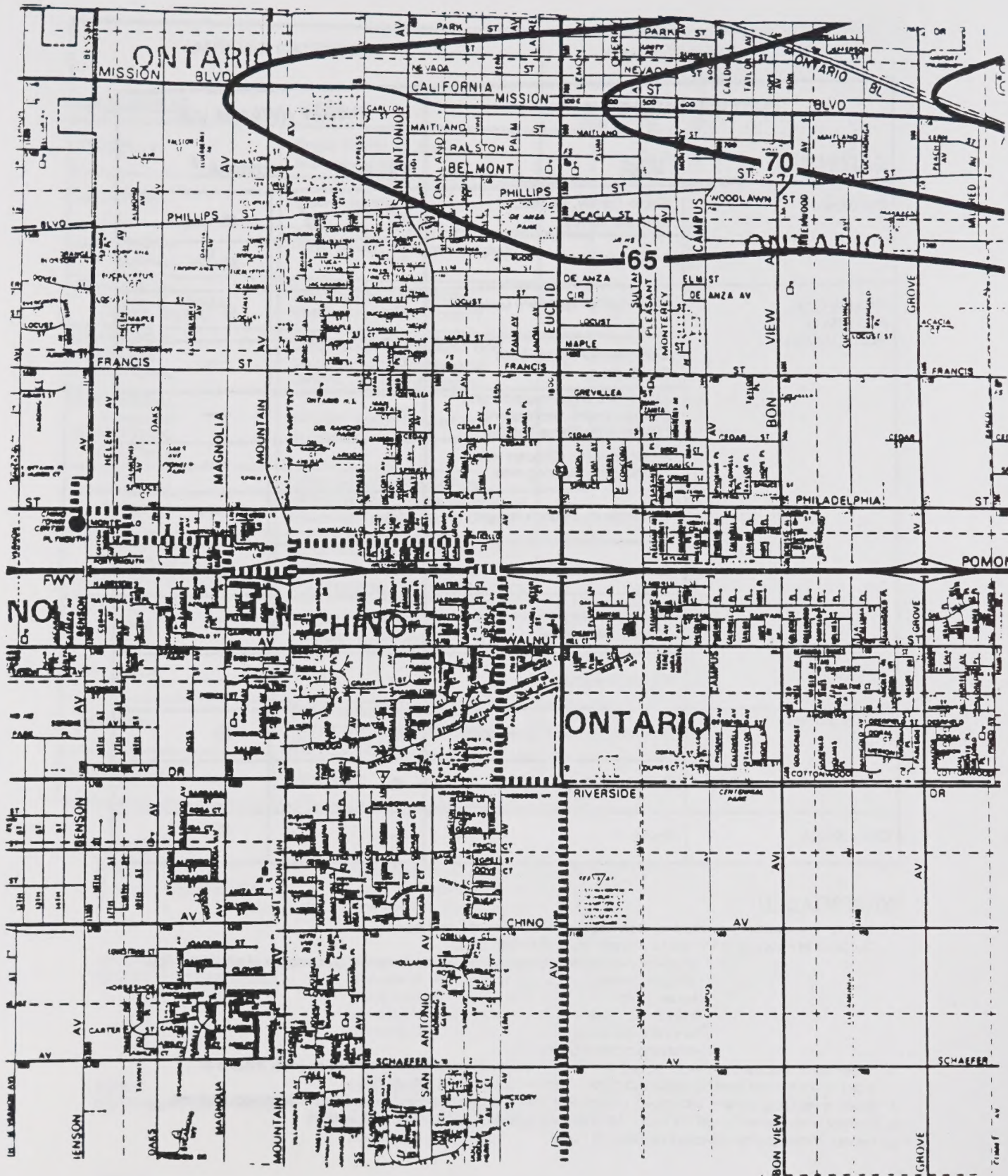
INTERPRETATION

- Indoor environment excluding: Bathrooms, toilets, closets, corridors.
- Outdoor environment limited to: Private yard of single family
Multi-family private patio or balcony which is served by a means of exit from inside.
Mobile home Park
Hospital patio
Park's picnic area
School's playground
Hotel and motel recreation area
- Noise level requirement with closed windows. Mechanical ventilating system or other means of natural ventilation shall be provided as of Chapter 12, Section 1205 of UBC.
- Noise level requirement with open windows, if they are used to meet natural ventilation requirement.
- Exterior noise level should be such that interior noise level will not exceed 45 LDN.
- Except those areas affected by aircraft noise.

SOURCE: MESTRE GREVE ASSOCIATES, 1989

Exhibit VI-5

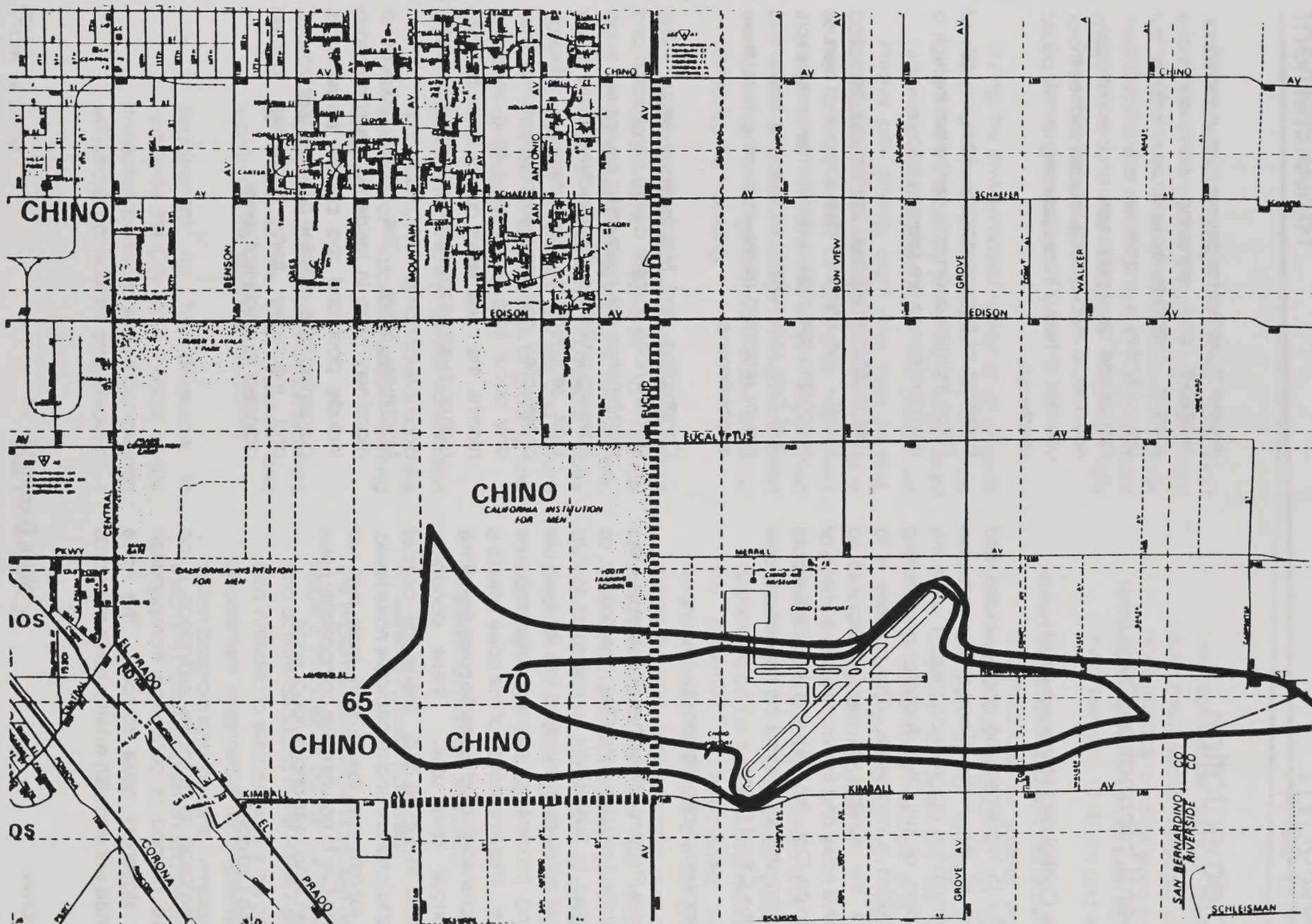
Interior and Exterior Noise Standards



Source : 1988 Ontario International Airport Quarterly Report

Exhibit VI-6

Ontario Int. Airport (1988) CNEL Noise Contours



Source: 1986 Chino Airport Master Plan Update

Implementation

General Information/Overview

A. The Control and Management of Noise

In order to implement the goals, policies and actions of the Noise Element, an effective implementation program developed within the constraints of the City's financial and staffing capabilities is necessary. The purpose is to reduce the number of people exposed to excessive noise and to minimize future effects of noise in the City. The following standards should be implemented to control the impacts of noise upon the City of Chino.

B. Community Noise Standards

The Noise Element establishes acceptable noise level limits throughout the City. The criteria, as presented in Exhibit VI-4 is designed to fully integrate noise considerations into the land use planning process to prevent noise/land use conflicts. Implementation of the noise criteria is accomplished through specific noise standards for various land uses. These standards, presented in Exhibit VI-5, define the policies related to land use and acceptable noise levels. These exhibits are the primary tools that will allow the City to ensure noise compatibility noise between land uses and outdoor noise.

C. Noise Ordinance

Implementation of a noise ordinance is an effective method in controlling transportation and/or stationary noise sources. The noise ordinance will establish exterior noise standards

in order to protect residences from unnecessary, excessive and annoying stationary noise sources. Stationary noise sources include, but are not limited to, machinery, music, equipment, pumps and air conditioners. It does not apply, however, to mobile noise sources such as motor vehicles or heavy trucks traveling on the public roadways.

Examples of noise problems within the City of Chino that are commonly controlled through a noise ordinance are listed as follows:

Late Night Entertainment (restaurants, bars, and clubs) - The primary noise sources at venues supporting late night entertainment are people and their automobiles at very late hours, and live or recorded music emanating from these establishments.

Construction and Maintenance Noise - The primary noise sources during construction and maintenance are excavating equipment, trucks traveling on/off the site, machinery and power tools required for the project. Although construction and maintenance activities may only occur from a few days to a couple of months, the noise levels can at times be quite high and very annoying to surrounding residents.

Machinery Noise - The primary sources of machinery noise in residential neighborhoods include pool and spa pumps, power tools, gardening tools, gasoline powered leaf blowers, and machinery from businesses located adjacent to residential zones.

Delivery Vehicle Noise - The primary sources of vehicle delivery noise occurs at night and early morning in the residential and commercial areas of the City. The resulting noise in these areas are common and the adjacent neighbors are frequently disturbed.

D. Construction Noise

During the environmental review of all projects requiring extensive construction, the City shall determine the proximity of the site to established residential neighborhoods. If the project will involve pile driving, night time truck hauling, blasting, 24-hour pumping (important in areas of high ground water) or any other high noise equipment, the environmental review shall include mitigation measures to mitigate potential noise impacts. Mitigation may include, but is not limited to, the following:

- ▶ Establishment of standard noise abatement measures to reduce construction noise impacts. For example, require temporary, moveable noise barriers around the job site and require mufflers on large pieces of grading and construction equipment.
- ▶ Requirements to use quieter construction techniques, such as non-squeal concrete finishes or asphalt/rubber paving material.
- ▶ Notification of city residents (homeowners & renters) of the time, duration and location of the construction activity.
- ▶ Requirement for the developer to reimburse the City for a 24-hour on-site inspection person to ensure compliance with project conditions and mitigation.

- ▶ Limitation on the hours of operation for equipment which produces significant noise impacts or noise levels noticeably above general construction noise to the hours between 10:00 am and 4:00pm.
- ▶ Construction projects that require special circumstances, or special equipment, should be subject to an acoustical analysis by a certified acoustical engineer to determine the extent of possible noise impacts and to make recommendations on appropriate mitigation measures.

Selecting the appropriate measures should be determined on a project by project basis, depending on the type of equipment used and the proximity to established residential neighborhoods. It should be recognized that during the early planning phases of a project, sufficient data may not be available to determine the appropriate mitigation measures. In such cases, the project should be required to prepare an analysis up front as part of the planning review process.

Implementation Tables

A. General Purpose Statement

The implementation table illustrated on the next page is intended to outline the goals, policies and actions discussed in the Noise Element. It is also intended to establish who is the primary city department responsible for implementing the action program and the time frame/deadline in which the action program should be completed.

NOISE ELEMENT IMPLEMENTATION TABLE

NOISE ELEMENT

ACTIONS	GOALS AND POLICIES		RESPONSIBLE AGENCY / DEPARTMENT *									TIMING	
	Goal G8-1 Protect Health, Safety & General Welfare		CD	PW	RC	MS	PD	FD	A	SBC	Other (specify)		
	P8-1.1	P8-1.2											
Noise Limits on Various Land Uses A8-1.1.1	X		X									1995	
Noise Impact Evaluation A8-1.1.2	X		X									On going	
Mitigate Projects A8-1.1.3	X		X									On going	
Noise Element Review Every Five (5) Years A8-1.1.4	X		X									On going	
Noise Guidelines A8-1.1.5	X			X								1997	
Coordinate Land Use Developments Near Airports A8-1.1.6	X		X									On going	
Noise Control for Motor Vehicles A8-1.2.1		X							X			On going	
Street Design and Traffic Control Measures A8-1.2.2		X		X								On going	
Truck Movement and Routes A8-1.2.3		X		X								On going	
Mitigation Measures in New Roadway Designs A8-1.2.4		X		X								On going	
Sound Wall and Berm Designs A8-1.2.5		X	X									On going	
Site Plan Noise Reduction Features A8-1.2.6		X	X									On going	
Motor Vehicle Noise Standards A8-1.2.7		X					X					On going	
* CD - Community Development Department MS - Management Services Department A - Administration PW - Public Works Department PD - Police Department SBC - San Bernardino County RC - Recreation and Community Services Department FD - China Rural Fire District													

NOISE ELEMENT IMPLEMENTATION TABLE

NOISE ELEMENT

ACTIONS	GOALS AND POLICIES		RESPONSIBLE AGENCY / DEPARTMENT *										TIMING
	Goal G-1 Protect Health, Safety & General Welfare		CD	PW	RC	MS	PD	FD	A	SBC	Other (specify)		
	AG-1.3	AG-1.4											
Adopt Community Noise Ordinance AG-1.3.1	X		X									1995	
Compliance for Commercial/Industrial Development AG-1.3.2	X		X									On going	
Require Acoustical Studies for Residential Dev. AG-1.3.3	X		X									On going	
Limit Hours of Construction AG-1.3.4	X		X									On going	
Compliance of Construction with Noise Element AG-1.3.5	X		X	X	X							On going	
Evaluate Construction Activities AG-1.3.6	X		X									On going	
Coordination on Noise Abatement AG-1.4.1		X	X	X	X							On-going	
Respond to Noise Complaints AG-1.4.2		X	X									On going	
City Coordination with OSHA AG-1.4.3		X	X									1996	
Enforce City Noise Ordinance AG-1.4.4		X	X									On-going	
Designate Noise Control Coordinator AG-1.4.5		X	X									1995	
Enforcement of the California U.B.C. AG-1.4.6		X	X									On-going	
• CD - Community Development Department • PW - Public Works Department • RC - Recreation and Community Services Department MS - Management Services Department PD - Police Department FD - China Rural Fire District A - Administration SBC - San Bernardino County													

Noise Element Chino General Plan

Technical Appendix

Noise Element Requirements

The State of California has mandated that each county and city prepare a Noise Element as part of its General Plan. Section 65302(f) of the California Government Code requires specifically:

Section 65302(f)

A Noise Element shall identify and appraise noise problems in the community. The noise element shall recognize the guidelines established by the Office of Noise Control in the State Department of Health Services and shall analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels for all of the following sources:

Highways and freeways.

Primary, major, and secondary local streets.

Passenger and freight on-line railroad operations and ground rapid transit systems.

Commercial, general aviation, heliport, helistop, and military airport operations, aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation.

Local industrial plants, including, but not limited to, railroad classification yards.

Other ground stationary noise sources

identified by local agencies as contributing to the community noise environment.

Noise contours shall be shown for all of the sources and stated in terms of community noise equivalent level (CNEL) or day-night average level (LDN). The noise contours shall be prepared on the basis of noise monitoring or following generally accepted noise modeling techniques for the various sources identified in paragraphs (1) to (6), inclusive. The noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise. The Noise Element shall include implementation measures and possible solutions that address existing and foreseeable noise problems, if any. The adopted noise element shall serve as a guideline for compliance with the state's noise insulation standards."

The State Guidelines for Preparation and Content of Noise Elements of the General Plan indicates that the Noise Element should present the noise environment in terms of noise contours. For those areas identified as containing noise-sensitive facilities, the noise environment is determined by monitoring. The purpose of this Technical Appendix is to provide background and supporting information for the City of Chino Noise Element. This Appendix contains background information on noise, information on the health effects of noise, noise assessment criteria, methodology in determining the noise environment, measurement and modeling results, a summary of noise sources in Chino, and a glossary.

Summary of Existing Noise Exposure

The sources of noise in Chino fall into five basic categories. These are: freeways and highways (the Pomona Freeway and Corona Expressway); aircraft (from Ontario International Airport, Chino Airport, and transient aircraft overflights); major and secondary arterial roadways; railroad lines and stationary sources. Each of these noise sources and their effects on the noise environment of Chino are summarized in the following paragraphs. The existing and forecast LDN noise contours for the roadway noise sources are presented in Exhibit VI A-1 and Exhibit VI A-2, respectively.

Freeways

Two freeways pass through the City of Chino. The Pomona Freeway (State Route 60) runs in east/west direction through the northern portions of Chino. The Corona Expressway (Highway 71) is oriented in a northwest/southeast direction, and runs along the City's southwestern boundary. The Pomona Freeway is both above and below grade in relation to adjacent land uses within the boundaries of the City of Chino. The Pomona Freeway is below the adjacent land uses for most segments of the freeway between east of Pipeline Avenue and east of Benson Avenue.

As part of a special study, the locations of existing sound walls were examined in the proposed road widening portion of the Pomona Freeway within the City boundaries. It can be observed that sound walls were provided for most existing homes adjacent to the freeway. These existing sound walls are situated at the

rear yards of these homes. For most homes located above the freeway, existing sound walls were sufficiently provided for. However, for many existing homes below the freeway, no sound walls were observed. For newer residential land uses which are located below the freeway, these homes were set back at an ample distance from the freeway with existing sound walls protecting the rear yards. The mitigating effects of the existing sound walls along the proposed widening portion of the Pomona Freeway are also included in the noise contour map (Exhibit VI A-1 and VI A-2).

The Corona Expressway is generally at grade with the adjacent land uses and has only a few sound walls. There are a number of residential developments located along both of these freeways. A number of these homes that are located directly adjacent to the freeways are exposed to noise levels in excess of 65 LDN. The LDN noise contours for the freeway is shown on the existing noise contour map (Exhibits VI A-1 and VI A-2).

Primary and Secondary Arterial Roadways

Traffic noise on surface streets is a significant source of noise within the community. The major roadways in the City and its sphere-of-influence include: Phillips Avenue, Francis Avenue, Philadelphia Street, Walnut Avenue, Riverside Drive, Chino Avenue, Schaefer Avenue, Edison Avenue, Eucalyptus Avenue, Merrill Avenue, Chino Hills Parkway, Corona Expressway, East End Avenue, Roswell Avenue, Pipeline Avenue, Norton Avenue, Ramona Avenue, Yorba Avenue, Monte Vista Avenue, Telephone Avenue, Central Avenue, El Prado Road, Vernon Avenue, Benson Avenue, Oaks Avenue, Magnolia Avenue, Mountain Avenue, Cypress Avenue, San Antonio Avenue, and Euclid Avenue.

Noise levels along roadways are determined by a number of traffic characteristics. Most important is the average daily traffic (ADT). Additional factors include the percentage of trucks, vehicle speed, the time distribution of this traffic and gradient of the roadway.

The land uses along the major roadways are commercial, industrial, residential, agricultural, and open space. The residential land uses that are adjacent to the major roadways are of primary importance when evaluating the noise environment within the City. Many of these homes are exposed to noise levels greater than 65 LDN; however, the majority of the residential areas in the City are exposed to noise levels less than 65 LDN. The LDN noise contours for the arterial roadways are shown on the existing noise contour map (Exhibits VI A-1 and VI A-2).

Railroads

The Southern Pacific Transportation Company has a railroad spur line that passes through the center of the City. The line enters the City from the northwest just west of East End Avenue and south of Philadelphia Street. It runs in a southeast/northwest direction until it turns to run parallel to Chino Avenue. The spur line ends before it hits Benson Avenue. Additional spur lines run from there to the south in an area bordered by Chino Avenue, Central Avenue, Eucalyptus Avenue, and Ramona Avenue. Railroads are not a significant source of noise within the City. The LDN noise contour map contours for the railroads are insignificant when compared with roadway noise. The 65 LDN noise contour does not extend beyond the right-of-way line.

Aircraft Operations

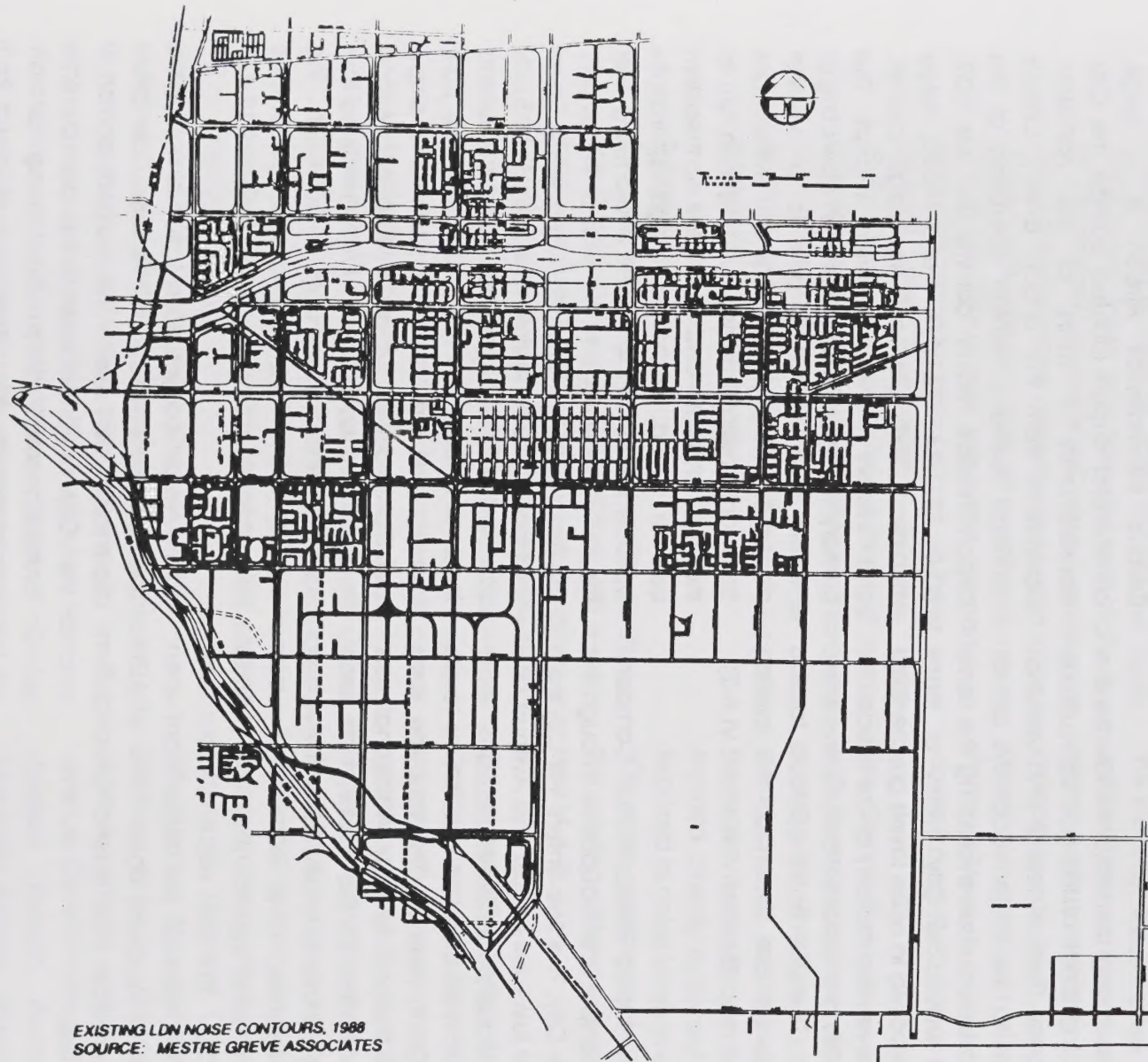
An additional source of noise affecting the City

of Chino is aircraft overflights. Chino has two airports just outside its borders: Ontario International Airport and Chino Airport. The Chino Airport is within the City's boundary.

Ontario International Airport is a large, commercial airport located outside the City, approximately 8 miles to the northeast. Operations from the airport overfly Chino's northeast sections. Aircraft operating at this airport include mainly commercial jets (737, DC-9, 727, 747, 757, 767, and MD80), large multi-prop commuter airlines, cargo aircraft, and smaller general aviation aircraft. The primary flight pattern of the aircraft operating at Ontario International Airport is a western departure. Aircraft with eastern destinations commonly take off to the west and then turn to the south and west and overfly the northeastern part of Chino. Nighttime cargo operations typically depart to the east to avoid flying over the residential areas to the west of the airport. The majority of the air traffic that overflies Chino is departing commercial jet airliners. The 65 LDN contour from these operations does not extend inside the City, however, aircraft noise from overflights is sufficient to cause some single event disturbance. Ontario International Airport is currently undergoing an FAA sponsored Part 150 noise and land use compatibility study. The existing (1988) CNEL noise contours for Ontario International Airport are shown in Exhibit VI A-3.

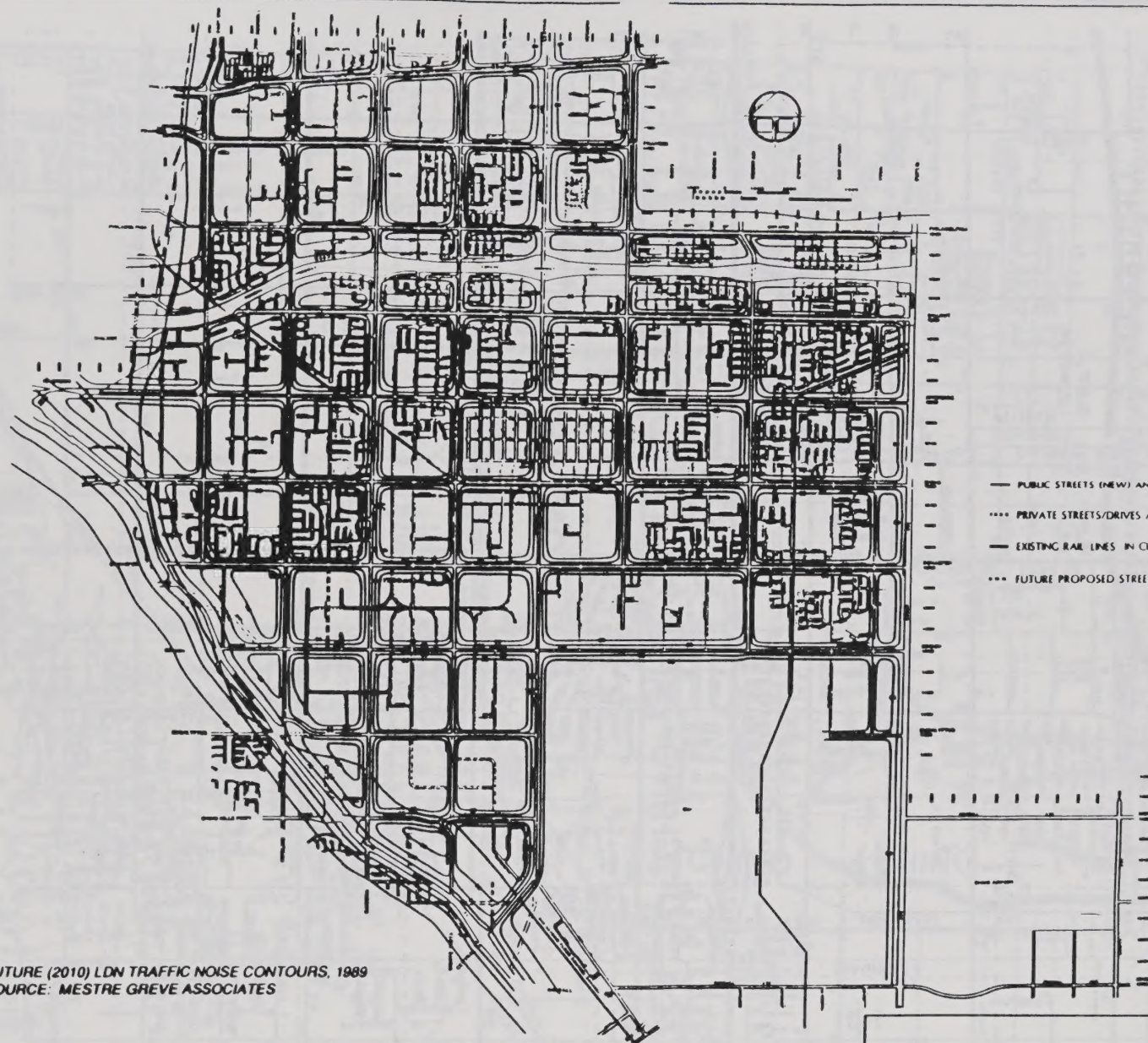
Chino Airport is a general aviation airport on the southeastern boundary of the City. Operations from this airport overfly the southern portion of the City. These operations are currently primarily small piston fixed wing aircraft. Information on this airport was obtained from the "Chino Airport Master Plan Update (November, 1986), and the Airport "Comprehensive Land Use Plan" (November, 1991).

CITY OF CHINO



EXISTING LDN NOISE CONTOURS, 1988
SOURCE: MESTRE GREVE ASSOCIATES

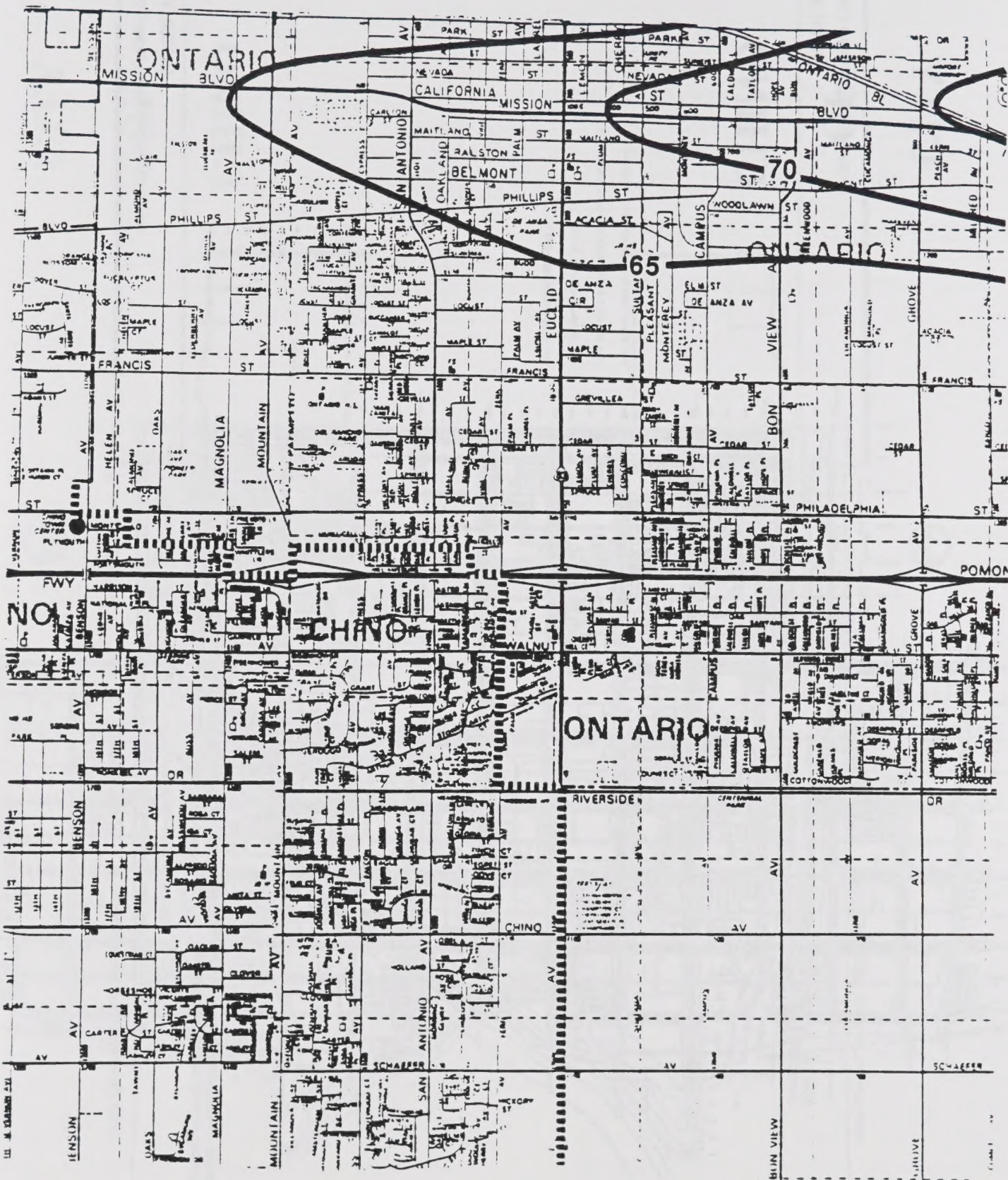
CITY OF CHINO



FUTURE (2010) LDN TRAFFIC NOISE CONTOURS, 1989
 SOURCE: MESTRE GREVE ASSOCIATES

Exhibit VI A-2

Future (2010) LDN Traffic Noise Contours



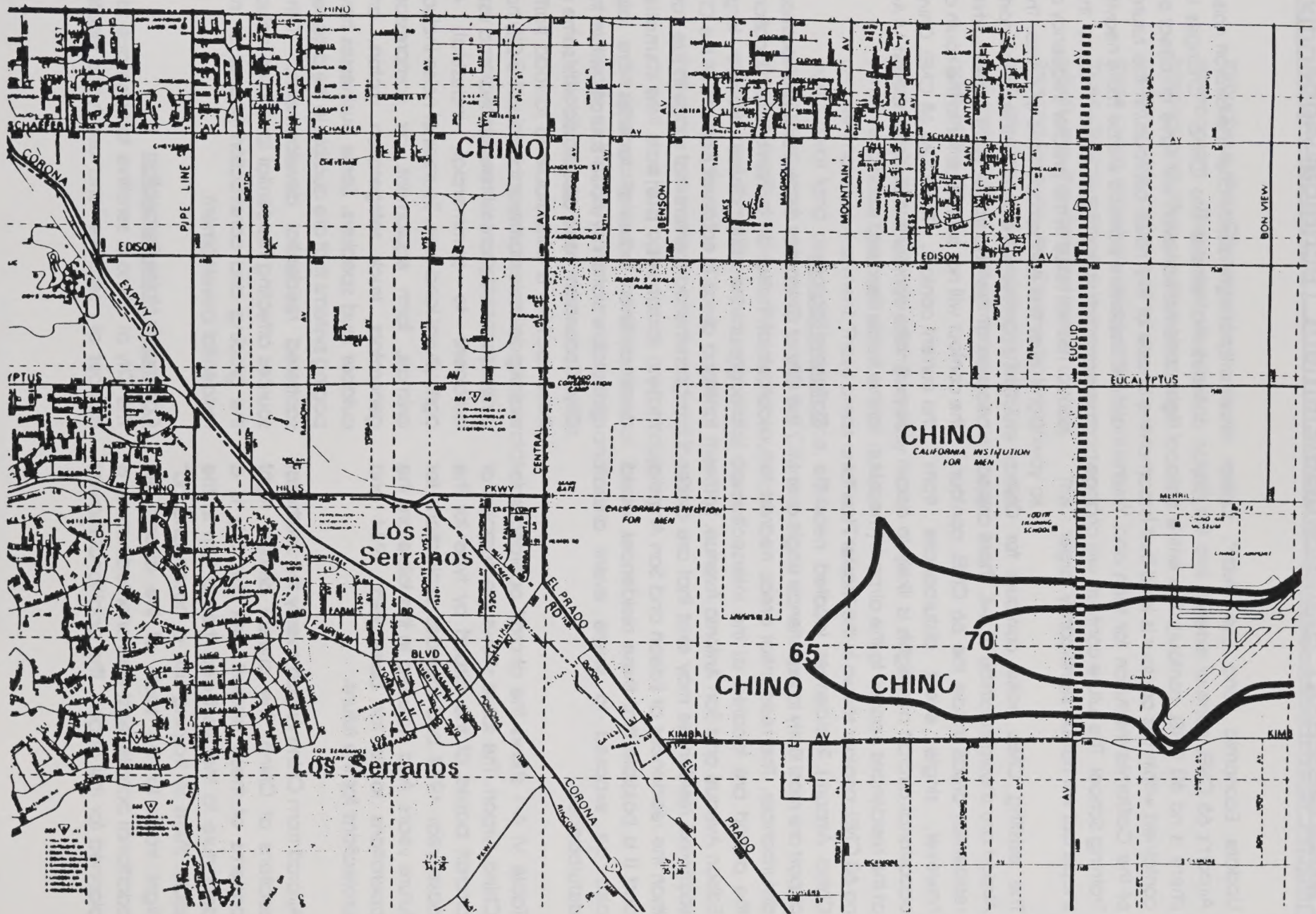
Source : 1988 Ontario International Airport Quarterly Report

Exhibit VI A-3

City of Chino

Ontario Int. Airport (1988) CNEL Noise Contours

Noise Element Technical Appendix VI A-6



Source: 1986 Chino Airport Master Plan Update

Update Economic Land Use Study". Chino Airport's 65 CNEL contour extends into the City (there is no 60 CNEL contour). The entire area contained within this contour is land that is part of the California Institution for Men and Youth Training School. The future contours will change shape but will not be significantly larger.

The existing CNEL noise contours for Chino Airport are shown in Exhibit VI A-4. There are no residential areas inside the 65 CNEL contour, however, single event disturbances from occasional aircraft overflights is likely to occur at the residences nearest to the airport. (There is no 60 CNEL contour shown in the Master Plan for Chino Airport.) Residences located near the airport are most likely to experience single event disturbances. The residential areas nearest to the airport are located at the intersection of Edison Avenue and San Antonio Avenue. Some scattered residences may exist that are closer than the residences at Edison and San Antonio and it is possible that these residences would also be exposed to single event aircraft disturbances.

Table VI A-1 shows the aircraft operations for Chino Airport. The table shows the numbers of aircraft based at the airport by type for the base year 1984 and includes projections for future years. Also included in this table are the operations totals for base year 1984 and projections for the future.

Aircraft from Chino Airport overfly the southeast sections of Chino. The current primary flight patterns of these aircraft over the City is a departure to the west and then a turn to the south. Pilots in training use a "touch and go" flight track to the south of the airport. An additional parallel east-west oriented runway is planned for the airport. The additional runway

itself will not significantly alter the aircraft noise contours that extend into Chino. Changes in flight patterns, however, will have an effect on the shape of the noise contours. In the future, aircraft departure patterns will be more heavily concentrated to the north rather than to the south. This will result in the greater frequency of flights over the northern portions of Chino. The 65 CNEL contour will extend further to the north because of this change in flight pattern while the contour will not extend as far to the south as the current contour. The future 65 CNEL Chino Airport noise contour is included in Exhibit VI A-7 of the Noise Element.

Stationary Sources

The City of Chino has agricultural and business sources of noise at a number of locations throughout the City. These include large farmland areas in southern portions of the City and commercial centers that range in size from major business projects to smaller developments. Industrial facilities are also attributable stationary noise sources within the City. Secondary noise associated with some of these facilities is attributable to railroad traffic making deliveries to these facilities. The City has a number of locations with residential land uses adjacent to commercial, industrial, or agricultural land uses. Sources of noise include animals, farm equipment, air compressors, generators, truck refrigeration motors, and outdoor loud speakers. Some businesses have paging systems that are audible in the adjacent scattered residential developments. Other sources affecting residential land uses include the grading and construction phases of infill residential development.

Community Noise Perception

The City of Chino is sensitive to noise due to a number of sensitive land use types located

throughout the City requiring a quiet noise environment. These are residential, school, hospital and other sensitive land uses located mainly in the upper half of the City. Many of these areas especially susceptible to noise are those directly adjacent to the major roadways which are the constant noise sources. The Pomona Freeway, the Corona State Highway as well as other major roadways attribute to the generally higher noise environment in these parts of the City.

Many parts of the City are also generally more sensitive to noise because of the overall quieter ambient noise environment. These areas are the agricultural land uses and open space. The agricultural land use areas within the City are located mostly in the northwest and southeast corner, and some scattered agricultural areas in the middle of the City. In addition, the City has many open space parks throughout the City as well as a vast open space area occupying the southeastly end of the City. Many of these parts of the City have a rural setting and are typically quieter than most urban areas.

Other land use areas such as commercial and industrial are less sensitive to noise.

Table VI A-1

*Projected Numbers of Aircraft Based at Chino Airport
and Projected Operations Information*

YEAR	Base Year				
	1984	1990	1995	2000	2005

BASED AIRCRAFT

Fixed Wing					
Single engine prop	672	890	1100	1250	1420
Multi-engine prop	95	170	235	310	370
Multi-engine jet	7	20	40	60	75
Helicopter	14	20	25	30	35

Total Based Aircraft	788	1100	1400	1650	1900
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OPERATIONS INFORMATION

Daily Operations	587	800	1005	1156	1321
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Source: Final Report "Chino Airport Master Plan Update Economic Land Use Study", Nov. 1986.

Definitions

Noise Definitions

Sound is technically described in terms of the loudness (amplitude) of the sound and pitch (frequency) of the sound. The standard unit of measurement of the loudness of sound is the Decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the way that the Richter scale is used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is judged to be twice as loud; and 20 dBA higher four times as loud; and so forth. Everyday sounds normally range from 30 dB (very quiet) to 100 dB (very loud). Examples of various sound levels in different environments are shown in Exhibit VI A-5.

Sound levels decrease as a function of distance from the source. This is a result of wave divergence, atmospheric absorption, and ground attenuation. As the sound wave form travels away from the source, the sound energy is spread over a greater area, dispersing the sound power of the wave. Atmospheric absorption also influences the levels that are received by the observer. The greater the distance traveled, the greater the influence and

the resultant fluctuations. The degree of absorption is a function of the frequency of the sound as well as the humidity and temperature of the air. Turbulence and gradients of wind, temperature and humidity also play a significant role in determining the degree of attenuation.

Noise has been defined as unwanted sound and it is known to have several adverse effects on people. From these known effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. This criteria is based on such known effects of noise on people as hearing loss (not generally a factor with community noise), communication interference, sleep interference, physiological responses and annoyance. Each of these potential noise impacts on people are briefly discussed in the following narratives:

Hearing Loss is, in general, not a concern in community noise problems. The potential for noise-induced hearing loss is more commonly associated with occupational noise exposures in heavy industry or very noisy work environments with long-term exposure. The Occupational Safety and Health Administration (OSHA) identifies a noise exposure limit of 90 dBA for 8 hours per day to protect from hearing loss. Noise levels in neighborhoods, even in very noisy airport environments near major international airports, is not sufficiently loud to cause hearing loss.

Communication Interference is one of the primary concerns in environmental noise problems. Communication interference includes speech interference and activities such as watching television. Normal

SOUND LEVELS AND LOUDNESS OF ILLUSTRATIVE NOISES IN INDOOR AND OUTDOOR ENVIRONMENTS
(A-*Scale* Weighted Sound Levels)

dB(A)	OVER-ALL LEVEL Sound Pressure Level Approx. 0.0002 Micobar	COMMUNITY (Outdoor)	HOME OR INDUSTRY	LOUDNESS Human Judgement of Different Sound Levels
130	UNCOMFORTABLY	Mil. Jet Aircraft Take-Off w/After-burner From Aircraft Carrier @ 50 Ft. (130)	Oxygen Torch (121)	120 dB(A) 32 Times as Loud
120 110	LOUD	Turbo-Fan Aircraft @ Take Off Power @ 200 Ft. (90)	Riveting Machine (110) Rock-N-Roll Band (108-114)	110 dB(A) 16 Times as Loud
100	VERY	Jet Flyover @ 1000 Ft. (103) Boeing 707, DC-8 @ 6080 Ft. Before Landing (106) Bell J-2A Helicopter @ 100 Ft. (100)		100 dB(A) 8 Times as Loud
90	LOUD	Power Mower (96) Boeing 737, DC-9 @ 6080 Ft. Before Landing (97) Motorcycle @ 25 Ft. (90)	Newspaper Press (97)	90 dB(A) 4 Times as Loud
80		Car Wash @ 20 Ft. (89) Prop. Airplane Flyover @ 1000 Ft. (88) Diesel Truck, 40 MPH @ 50 Ft. (84) Diesel Train, 45 MPH @ 100 Ft. (83)	Food Blender (88) Milling Machine (85) Garbage Disposal (80)	80 dB(A) 2 Times as Loud
70	MODERATELY LOUD	High Urban Ambient Sound (80) Passenger Car, 65 MPH @ 25 Ft. (77) Freeway @ 50 Ft. From Pavement Edge, 10:00 AM (76 -or- 6)	Living Room Music (76) TV-Audio, Vacuum Cleaner	70 dB(A)
60		Air Conditioning Unit @ 100 Ft. (60)	Cash Register @ 10 Ft. (65-70) Electric Typewriter @ 10 Ft. (64) Dishwasher (Rinse) @ 10 Ft. (60) Conversation (60)	60 dB(A) 1/2 as Loud
50	QUIET	Large Transformers @ 100 Ft. (50)		50 dB(A) 1/4 as Loud
40		Bird Calls (44) Lower Limit Urban Ambient Sound (40)		40 dB(A) 1/8 as Loud
	JUST AUDIBLE	(dB(A) Scale Interrupted)		
10	THRESHOLD OF HEARING			

SOURCE: Reproduced from Melville C. Branch and R. Dale Outdoor Noise in the Metropolitan Environment,
Published by the City of Los Angeles, 1970, p.2.

Exhibit VI A-5

Examples of Typical Sound Levels

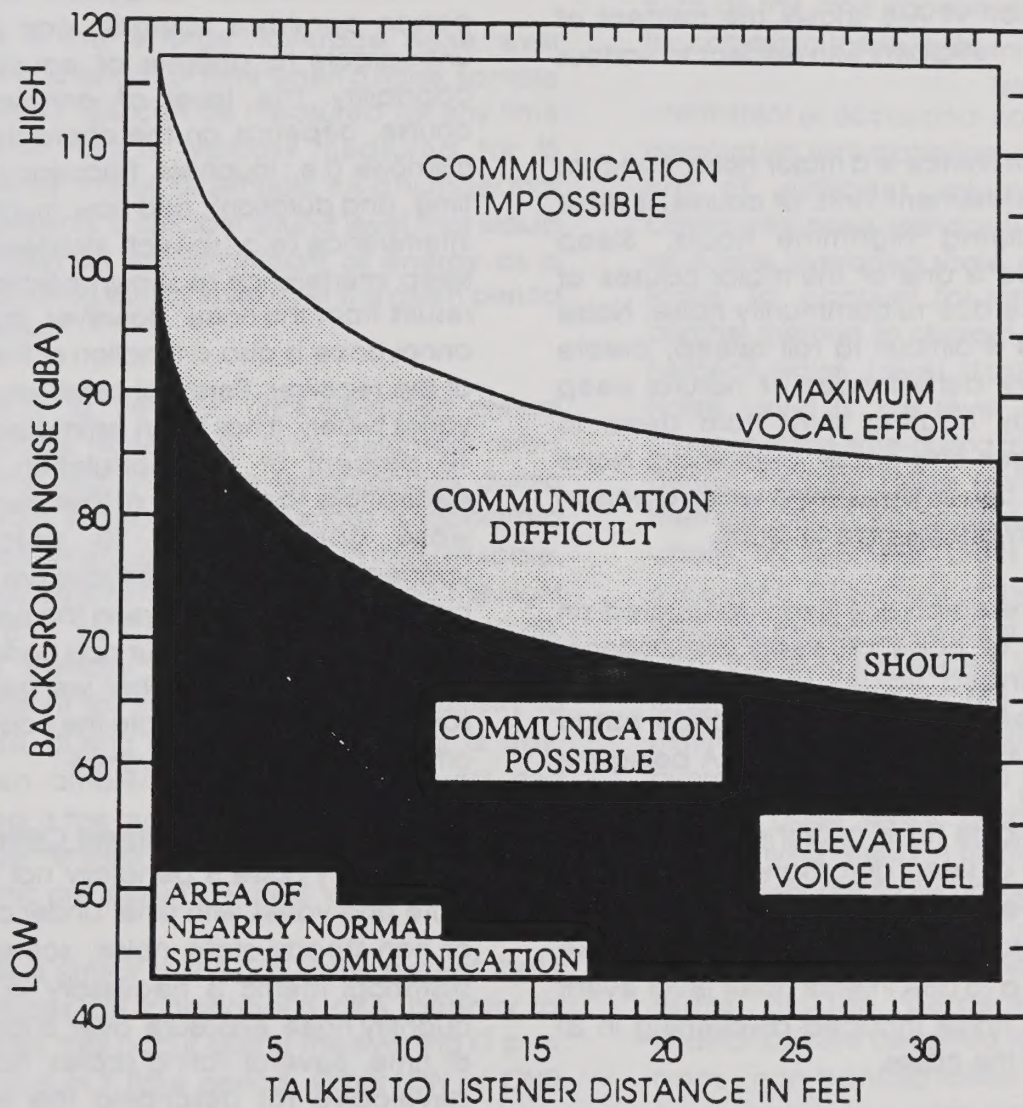


Exhibit VI A-6

Effect of Noise on Speech Interference

conversational speech is in the range of 60 to 65 dBA and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance between speaker and listener and voice level. Exhibit VI A-6 shows the percent of sentence intelligibility with respect to various noise levels.

Sleep Interference is a major noise concern in noise assessment and, of course, is most critical during nighttime hours. Sleep disturbance is one of the major causes of annoyance due to community noise. Noise can make it difficult to fall asleep, create momentary disturbances of natural sleep patterns by causing shifts from deep to lighter stages and cause awakening. Noise may even cause awakening which a person may or may not be able to recall.

Extensive research has been conducted on the effect of noise on sleep disturbance. Recommended values for desired sound levels in residential bedroom space range from 25 to 45 dBA with 35 to 40 dBA being the norm. The National Association of Noise Control Officials have published data on the probability of sleep disturbance with various single event noise levels. Based on experimental sleep data as related to noise exposure, a 75 dBA interior noise level event will cause noise induced awakening in 30 percent of the cases.

Physiological Responses are those measurable effects of noise on people which are realized as changes in pulse rate, blood pressure, etc. While such effects can be induced and observed, the extent is not known to which these physiological responses cause harm or are sign of harm. Generally, physiological responses are a reaction to a loud short term noise such as a

rifle shot or a very loud jet overflight.

Annoyance is the most difficult of all noise responses to describe. Annoyance is a very individual characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing capability. The level of annoyance, of course, depends on the characteristics of the noise (i.e.; loudness, frequency spectra, time, and duration), and how much activity interference (e.g. speech interference and sleep interference as shown in Exhibit VI A-6) results from the noise. However, the level of annoyance is also a function of the attitude of the receiver. Personal sensitivity to noise varies widely. It has been estimated that 2 to 10 percent of the population is highly susceptible to noise not of their own making, while approximately 20 percent are unaffected by noise. Attitudes are affected by the relationship between the person and the noise source. (Is it our dog barking or the neighbor's dog?) Whether we believe that someone is trying to abate the noise will also affect our level of annoyance.

Noise Metric and Assessment Criteria

Community noise is generally not a steady state and varies with time. Under conditions of non-steady state noise, some type of statistical metric is necessary in order to quantify noise exposure over a long period of time. Several rating scales have been developed for describing the effects of noise on people. They are designed to account for the known effects of noise on people that are discussed above.

Based on these effects, the observation has been made that the potential for noise to impact people is dependent on the total acoustical energy content of the noise. A number of noise scales have been

developed to account for this observation. These scales are: the Equivalent Noise Level (LEQ), the Day Night Noise Level (LDN), and the Community Noise Equivalent Level (CNEL). These scales are described in the following paragraphs.

LEQ is the "energy" average noise level during a length of time when a noise sample is taken. LEQ can be measured for any time period, but is typically measured for 15 minutes, 1 hour, or 24 hours. It is a number that represents a decibel sound level that would contain an equal amount of energy as a fluctuating sound level over the given period of time.

LDN is a 24-hour, time-weighted annual average noise level. Time-weighted refers to the fact that noise which occurs during certain sensitive time periods is penalized for occurring at these times. In the LDN scale, those events that take place during the night (10 p.m. to 7 a.m.) are penalized by 10 dB. This penalty was selected to attempt to account for increased human sensitivity to noise during the quieter period of a day, when ambient noise is at its lowest and sleep is the most probable activity. Example noise environments in terms of the LDN metric are shown in Exhibit VI A-7.

CNEL is similar to the LDN scale except that it includes an additional 5 dBA penalty for events that occur during the evening (7 p.m. to 10 p.m.) time period. Either LDN or CNEL may be used to identify community noise impacts within the Noise Element.

The public reaction to different noise levels varies from community to community. Extensive research has been conducted on human responses to exposure of different levels of noise. Exhibit VI A-8 relates CNEL/LDN noise levels to community

response from some of these surveys, and it indicates community opposition generally occur at 65 CNEL or above (approaching moderately loud). Community noise standards are derived from tradeoffs between community response surveys, such as this, and economic considerations for achieving these levels.

Intermittent or occasional noise such as that associated with stationary noise sources is not of sufficient volume to exceed community noise standards that are based on a time averaged scale such as the LDN scale. To account for intermittent noise, another method to characterize noise is the Percent Noise Level ($L(n)$). The Percent Noise Level is the level exceeded "n" percent of the time during the measurement period. Percent Noise Levels are another method of characterizing ambient noise where, for example, L_{90} is the noise level exceeded 90 percent of the time, L_{50} is the level exceeded 50 percent of the time, and L_{10} is the level exceeded 10 percent of the time. L_{90} represents the background or minimum noise level, L_{50} represents the average noise level, and L_{10} the peak or intrusive noise levels. Examples of various noise environments in terms of the Percent Noise Levels are shown in Exhibit VI A-9.

Noise Ordinances are typically specified in terms of the percent noise levels. Ordinances are designed to protect people from non-transportation related noise sources such as loud music, machinery and vehicular traffic on private property. Noise Ordinances apply to motor vehicle noise on public streets or other transportation-related noise sources that are not preempted by State or Federal government requirements.

Noise and Land Use Compatibility Guidelines

The purpose of this section is to present

Information regarding the compatibility of various land uses with environmental noise. It is from these guidelines and standards that the City of Chino Noise Criteria and Standards have been developed. Noise/land use guidelines have been produced by a number of Federal and State agencies including the Federal Highway Administration, the Environmental Protection Agency, the Department of Housing and Urban Development, the American National Standards Institute and the State of California. These guidelines, presented in the following paragraphs, are all based upon cumulative noise criteria such as LEQ, LDN or CNEL.

In March, 1974, the Environmental Protection Agency published a very important document entitled "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare With an Adequate Margin of Safety" (EPA 550/9-74-004). Exhibit VI A-10 presents a table of land uses and requisite noise levels. In this table, 55 LDN is described as the requisite level with an adequate margin of safety for areas with outdoor uses; this includes residences and recreational areas. The EPA "levels document" does not constitute a standard, specification or regulation, but identifies safe levels of environmental noise exposure without consideration for economic cost for achieving these levels.

The Federal Highway Administration (FHWA) has adopted and published noise abatement criteria for highway construction projects. The noise abatement criteria specified by the FHWA are presented in Exhibit A-11 in terms of the maximum one-hour Noise Equivalent Level (LEQ). The FHWA noise abatement criteria basically establishes an exterior noise goal for residential land uses of 67 LEQ and an interior goal for residences of 52 LEQ. The noise abatement criteria applies to private yard areas and assumes that typical wood frame homes with windows open provide 10 dB noise reduction (outdoor to indoor) and 20 dB noise reduction with windows closed.

The State of California requires each City and county to adopt Noise Elements in their General Plans. Such Noise Elements must contain a noise/land use compatibility matrix. A recommended (but not mandatory) matrix is present in the "Guidelines for the Preparation and Content of Noise Elements of the General Plan," (Office of Noise Control, California Department of Health, February 1976). Exhibit VI A-12 presents this recommended matrix.

LDN

Outdoor Location

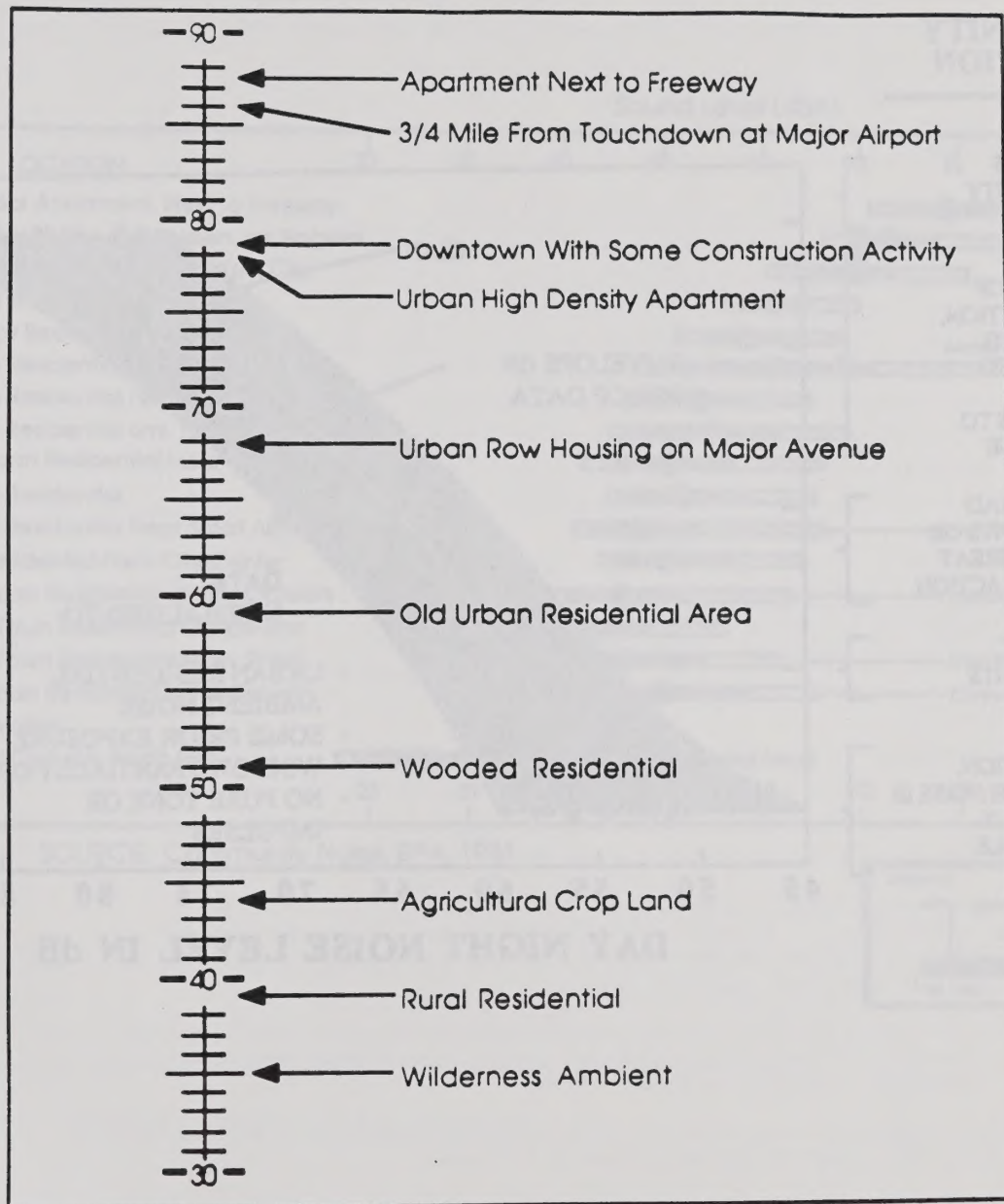


Exhibit VI A-7

Typical Outdoor Noise Levels

COMMUNITY REACTION

VIGOROUS
COMMUNITY
ACTION

SEVERAL
THREATS OF
LEGAL ACTION,
OR STRONG
APPEALS TO
LOCAL
OFFICIALS TO
STOP NOISE

WIDESPREAD
COMPLAINTS OR
SINGLE THREAT
OF LEGAL ACTION

SPORADIC
COMPLAINTS

NO REACTION,
ALTHOUGH NOISE IS
GENERALLY
NOTICEABLE

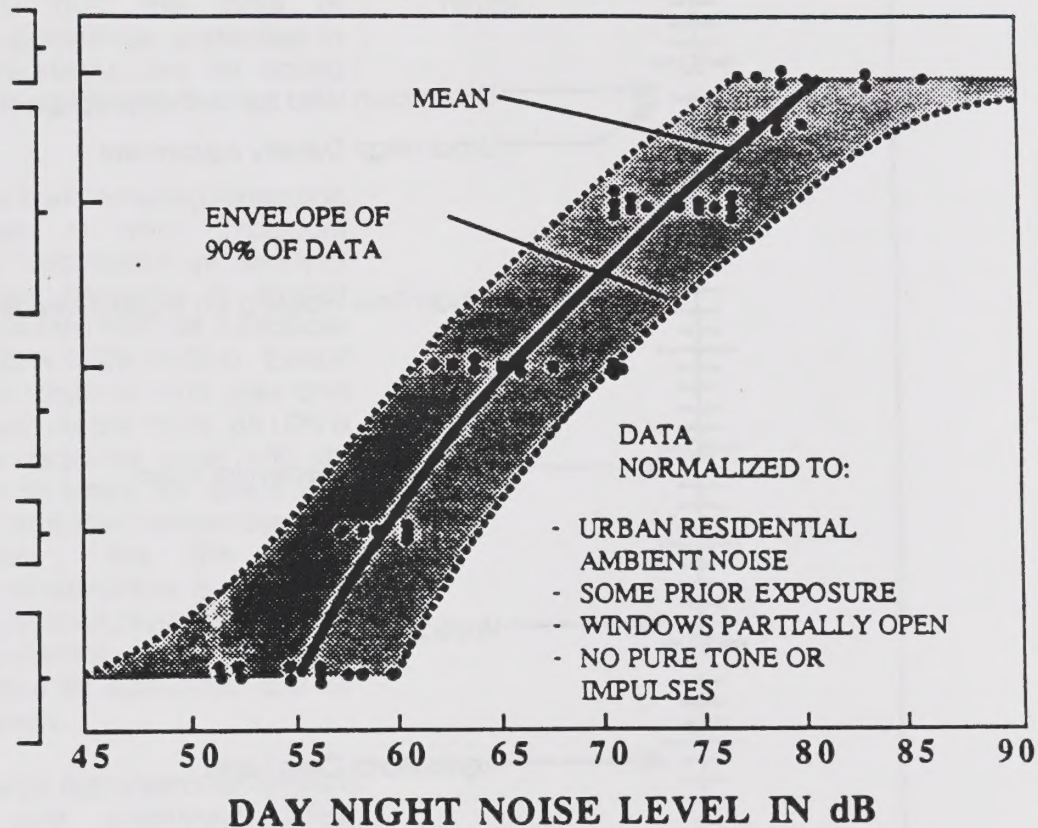
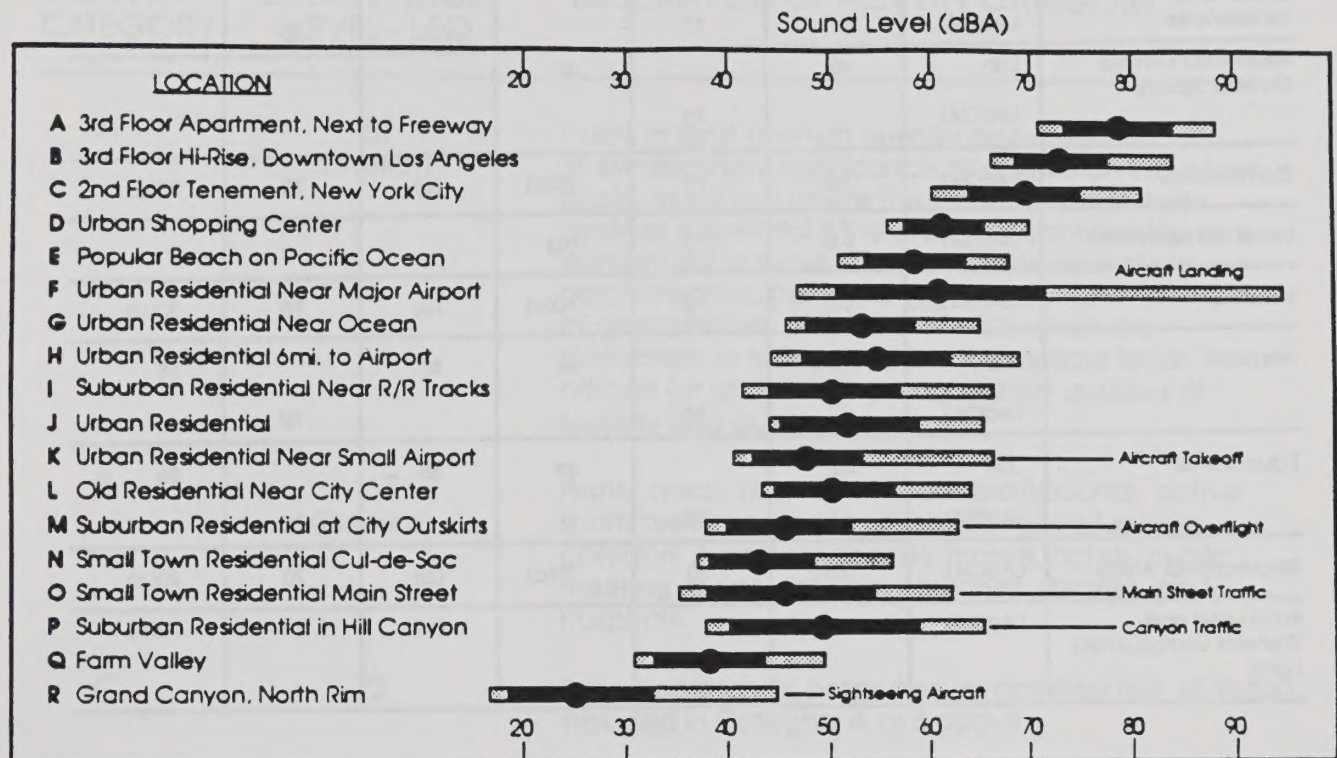


Exhibit VI A-8

Community Reaction Surveys



SOURCE: Community Noise, EPA, 1971

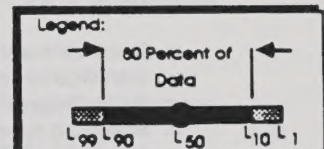


Exhibit VI A-9

Examples of Daytime Outdoor Percentile Noise Levels

	Measure	Indoor Activity Interference	Hearing Loss Consideration	To Protect Against Both Effects (b)	Outdoor Activity Interference	Hearing Loss Consideration	To Protect Against Both Effects (b)
Residential with Outside Space and Farm Residences	Ldn	45		45	55		55
	Leq(24)		70			70	
Residential with No Outside Space	Ldn	45		45			
	Leq(24)		70				
Commercial	Leq(24)	(a)	70	70(c)	(a)	70	70(c)
Inside Transportation	Leq(24)	(a)	70	(a)			
Industrial	Leq(24)(d)	(a)	70	70(c)	(a)	70	70(c)
Hospitals	Ldn	45		45	55		55
	Leq(24)		70			70	
Educational	Ldn	45		45	55		55
	Leq(24)		70			70	
Recreational Areas	Leq(24)	(a)	70	70(c)	(a)	70	70(c)
Farm Land and General Unpopulated Land	Leq(24)				(a)	70	70(c)

Code

- Since different types of activities appear to be associated with different levels, identification of a maximum level for activity interference may be difficult except in those circumstances where speech communication is a critical activity.
- Based on lowest level.
- Based only on hearing loss.
- An Leq(8) of 75 dB may be identified in these situations so long as the exposure over the remaining 16 hours per day is low enough to result in a negligible contribution to the 24-hour average, i.e., no greater than an Leq of 60 dB.

Note: Explanation of identified level for hearing loss: The exposure period which results in hearing loss at the identified level is a period of 40 years.

* Refers to energy rather than arithmetic averages.

SOURCE : EPA

Exhibit VI A-10

Environmental Protection Agency Guidelines

Methodology

ACTIVITY CATEGORY	DESIGN NOISE LEVEL - LEQ	DESCRIPTION OF ACTIVITY CATEGORY
A	57 (Exterior)	Tracts of land in which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheatres, particular parks or portions of open spaces, or historic districts which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	67 (Exterior)	Picnic areas, recreation areas playgrounds, active sports areas and parks which are not included in category A and residences, motels, hotels, public meeting rooms, schools, churches, libraries, and hospitals.
C	72	Developed lands, properties, or activities not included in Category A or B above.
D	-	For requirements of undeveloped lands see FHWA PPM 773.
E	52	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

SOURCE: FEDERAL HIGHWAY ADMINISTRATION, 1978

Land Use Category	Community Noise Exposure Ldn or CNEL, dB					
	55	60	65	70	75	80
Residential - Low Density Single Family, Duplex, Mobile Homes						
Residential - Multiple Family						
Transient Lodging Motels, Hotels						
Schools, Libraries, Churches Hospitals, Nursing Homes						
Auditoriums, Concert Halls, Amphitheatres						
Sports Arena, Outdoor Spectator Sports						
Playgrounds, Neighborhood Parks						
Golf Courses, Riding Stables Water Recreation, Cemeteries						
Office Buildings, Business Commercial and Residential						
Industrial, Manufacturing Utilities Agriculture						

Interpretation

 Normally Acceptable

Specified Land Use is Satisfactory, Based Upon the Assumption that Any Buildings Involved are of Normal Conventional Construction, Without Any Special Noise Insulation Requirements.

 Conditionally Acceptable

New Construction or Development Should be Undertaken Only After a Detailed Analysis of the Noise Reduction Requirement is Made and Needed Noise Insulation Features Included in the Design. Conventional Construction, but with Closed Windows and Fresh Air Supply Systems or Air Conditioning, Will Normally Suffice.

 Normally Unacceptable

New Construction or Development Should Generally be Discouraged. If New Construction or Development Does Proceed, a Detailed Analysis of the Noise Reduction Requirements Must be Made and Needed Noise Insulation Features Included in the Design.

 Clearly Unacceptable

New Construction or Development Should Generally not be Undertaken.

SOURCE: STATE OF CALIFORNIA, 1976

Methodology

The noise environment in Chino was modeled using a comprehensive noise measurement survey of existing noise sources and incorporating these results into computer noise models (it is, of course, impossible to measure future noise levels, so we must rely on computer noise models for future noise estimates). The noise environment is commonly presented graphically in terms of lines of equal noise levels, or contours. The following paragraphs detail the methodology used in the above.

Measurement Procedure

Twenty-five sites were selected for measurement of the noise environment in Chino. A review of noise complaints and identification of major noise sources in the community provided the initial base for development of the community noise survey. The measurement locations were selected on the basis of proximity to major noise sources and noise sensitivity of the land use. The measurement locations are depicted in Exhibit VI A-13.

In addition, twelve more measurement sites were selected adjacent to the proposed road widening portions of the Pomona Freeway (SR-60) and Walnut Avenue. These measurements depict the noise environment of the residential land uses adjacent to these roadways. These are special studies to determine the need for sound walls at these locations. The twelve measurement sites are also depicted in Exhibit VI A-13.

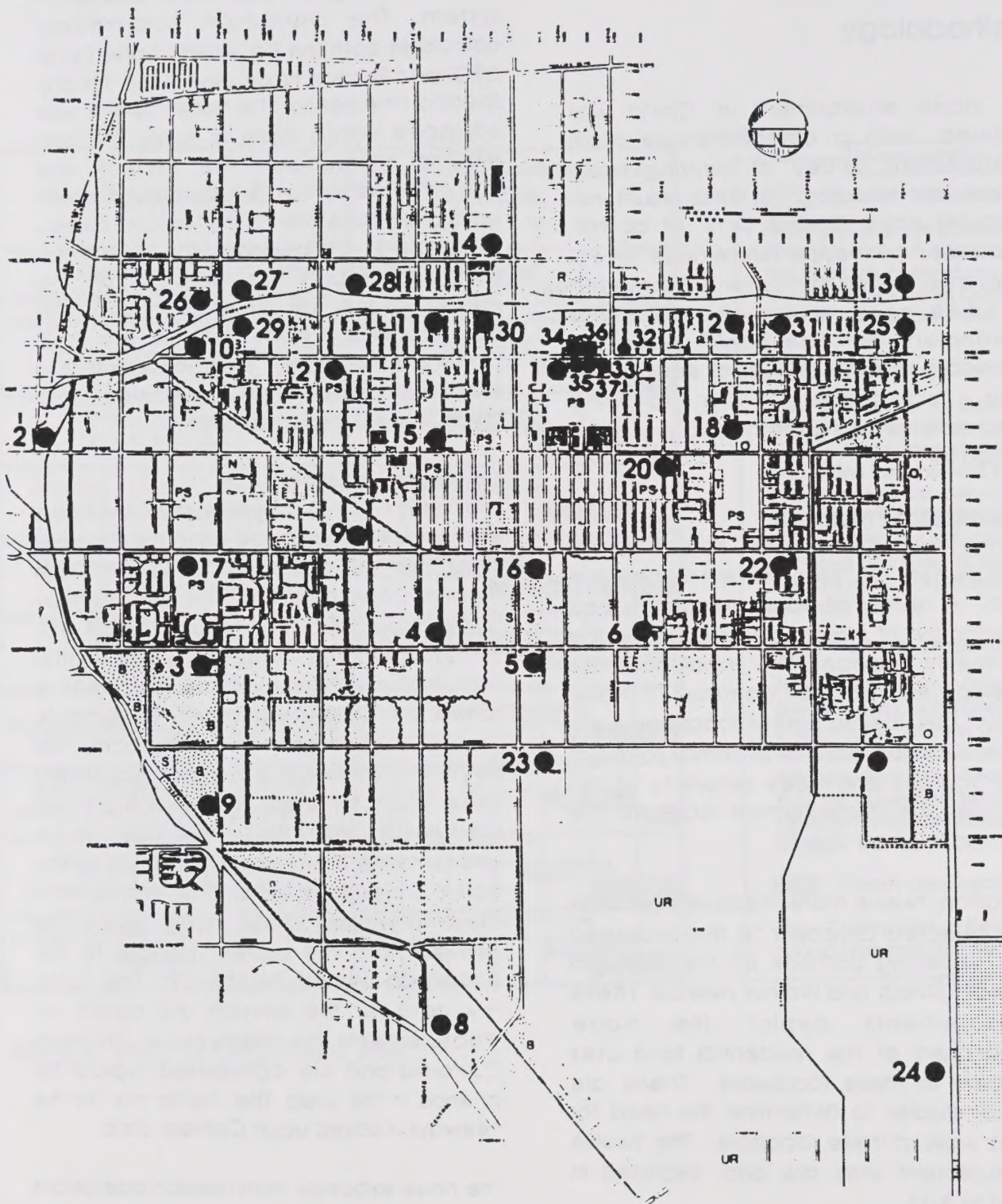
The Chino Noise Element measurement survey utilized the Bruel & Kjaer 4427

automated digital noise data acquisition system. This instrument automatically calculates both the Equivalent Noise Level (LEQ) and Percent Noise Level (L%) for any specific time period. The noise monitor was equipped with a Bruel & Kjaer 1/2 inch electric microphone. The system was calibrated with a Bruel & Kjaer calibrator with calibration traceable to the National Bureau of Standards. Calibration for the calibrator is certified through the duration of the measurements by Bruel & Kjaer. This measurement system satisfies the ANSI (American National Standards Institute) Standards 1.4 for Type 1 precision noise measurement instrumentation.

Computer Modeling

The traffic noise levels projected in the Noise Element were computed using the Highway Noise Model published by the Federal Highway Administration ("FHWA Highway Traffic Noise Prediction Model," FHWA-RD-77-108, December 1978). The FHWA Model uses traffic volume, vehicle mix, vehicle speed, and roadway geometry to compute the LEQ noise level. A computer code has been written which computes equivalent noise levels for each of the time periods used in LDN. Weighting these noise levels and summing them, result in the LDN for the traffic projections used. The traffic data used to project these noise levels are derived from the current update to the Circulation Element for the City. The traffic mix data for the arterials are based on measurements for roadways in Southern California and are considered typical for arterials in this area. The traffic mix for the freeways is based upon Caltrans data.

The noise exposure from railroad operations is derived from the Wyle model "Assessment of Noise Environments Around Railroad Operations" (Wyle Laboratory



SOURCE: MESTRE GREVE ASSOCIATES, 1989

Exhibit VI A-13

Noise Measurement Locations

Report WCR 73-5, July 1973). Evaluation of the noise environments resulting from train operations may be segregated into two categories, the noise from the power source (locomotive) and the noise produced by rolling stock (individual rail cars). The noise from the locomotives (diesel) results primarily from the engine exhaust with contributions from the vibration of structural components of the unit. The noise from individual rail cars is produced by the wheel/rail interaction and the vibration of wheel assemblies. Data inputs to the model include: velocity, number of cars per train, number of trains, time distribution of the trains, grade of track and type of track. From these input data, LDN noise levels at various distances from the rail line can be computed.

Results

Measurement Results

The noise measurement program was conducted on the 6th, 10th, and 12th days of October, 1988, and on the 16th and 21st days of November, 1988, at twenty-five locations throughout the City. Noise measurement surveys were also conducted for two special road widening studies within the City. A noise measurement survey was conducted on the 16th and 17th days of January, 1992, at six locations adjacent to the the proposed widening portion of the Pomona Freeway. Another noise measurement survey was conducted on the 13th day of August, 1992, at six more locations along the proposed widening portion of Walnut Avenue (between Vernon Avenue and Cedar Avenue). The results of the ambient noise measurements at each site are depicted in Exhibit VI A-14.

These figures also depict the date and time of the measurement and the primary noise source affecting the noise environment. Each site was monitored for a minimum of 15 minutes. Two locations near Ontario International Airport used to measure aircraft noise (Sites 24 and 25) were measured for longer durations.

The quantitles measured were the Equivalent Noise Level (LEQ), the maximum noise level and the Percent Noise Levels (L%). Exhibit VI A-15 displays the shaded bars in terms of L99, L90, Leq, L10, and Lmax.

At the airport sites (Sites 24 and 25), Sound Exposure Levels (SEL) for individual aircraft overflights were also measured. These are single-event aircraft measurement levels. The results of the single-event aircraft

measurement levels are in dBA, and are summarized in Exhibits VI A-15 and VI A-16.

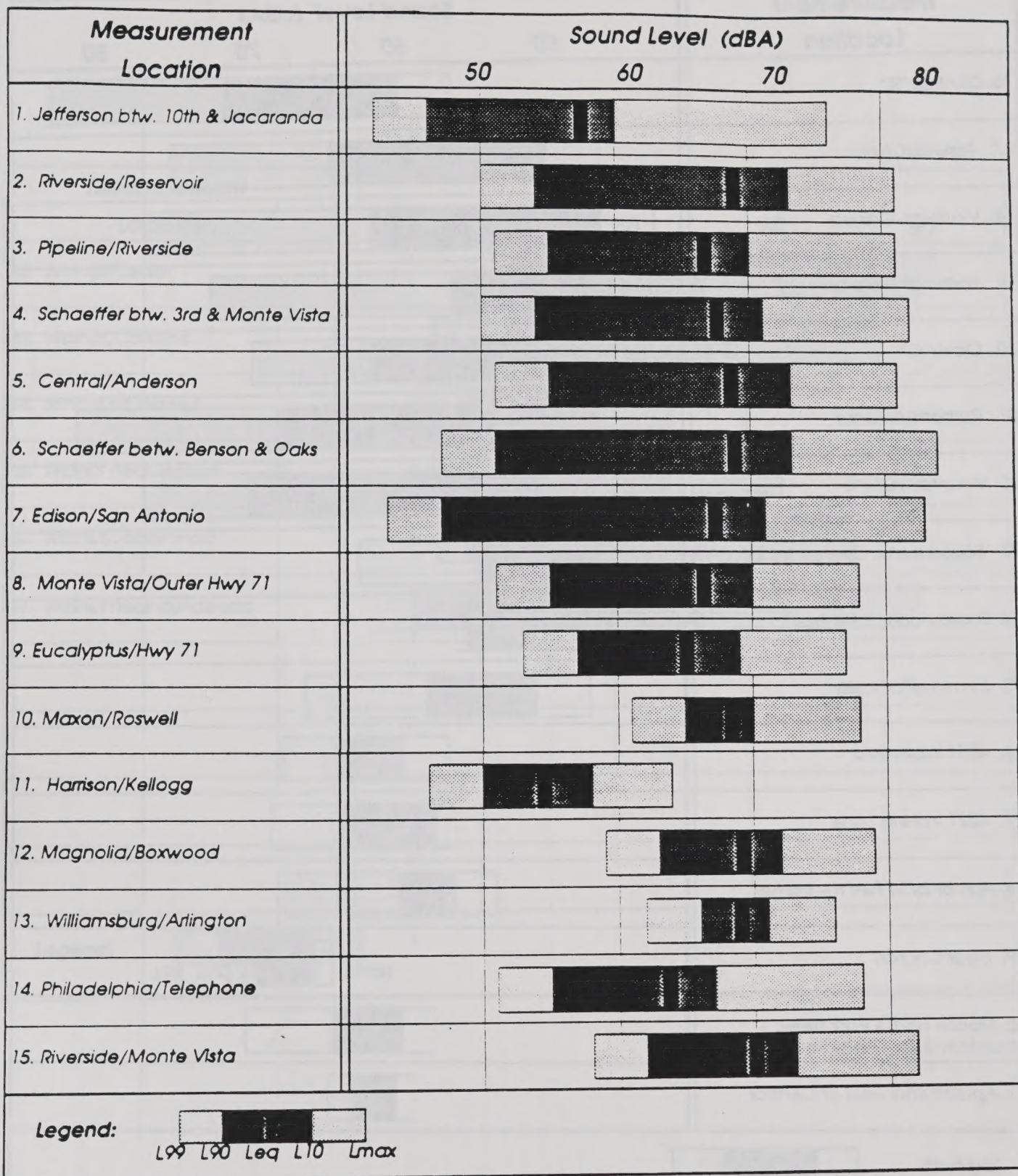
The results of the measurements showed that roadway noise is a major source of noise within Chino. The ambient sound levels along these roadways were generally 60 to 70 dBA. At locations away from roadways, the noise levels were as low as 40 dBA.

The ambient sound levels are also affected by aircraft overflights. The southeastern portion of the City is affected by overflights from Chino Airport. The results of these measurements are shown in Exhibit A-15 for measurement Site 24. There are no noise sensitive land uses in immediate proximity of the airport, however, the large number of operations can result in annoyance.

The results of the measurements also showed that the northeastern portion of the City is affected by aircraft overflights from Ontario International Airport. The results of these measurements at Site 25 are shown in Exhibit VI A-16. These data showed the single event sound levels from aircraft departing Ontario range from 80 to 95 SEL. Assuming an estimated 30 to 35 overflights of the City per day, the noise level at this location is 56 CNEL. While the CNEL noise level is not significant, the single event levels are of sufficient level and duration to result in some single event annoyance.

Noise Contours

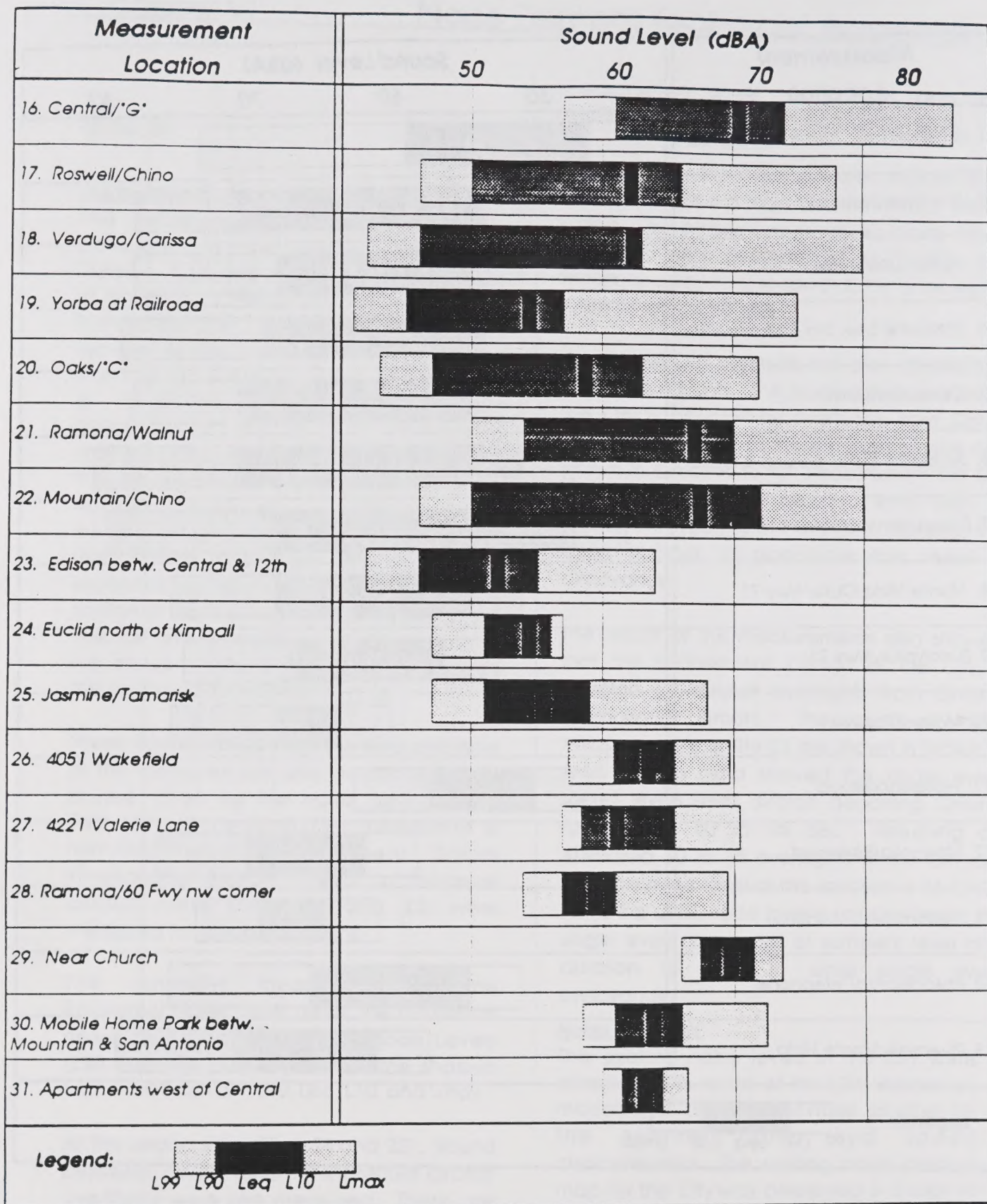
The existing noise levels in the City were established in terms of the LDN indices by modeling all of the traffic noise sources for the existing traffic and speed characteristics. The existing noise contour map for the City was presented in Exhibit VI A-1.



SOURCE: MESTRE GREVE ASSOCIATES, 1989

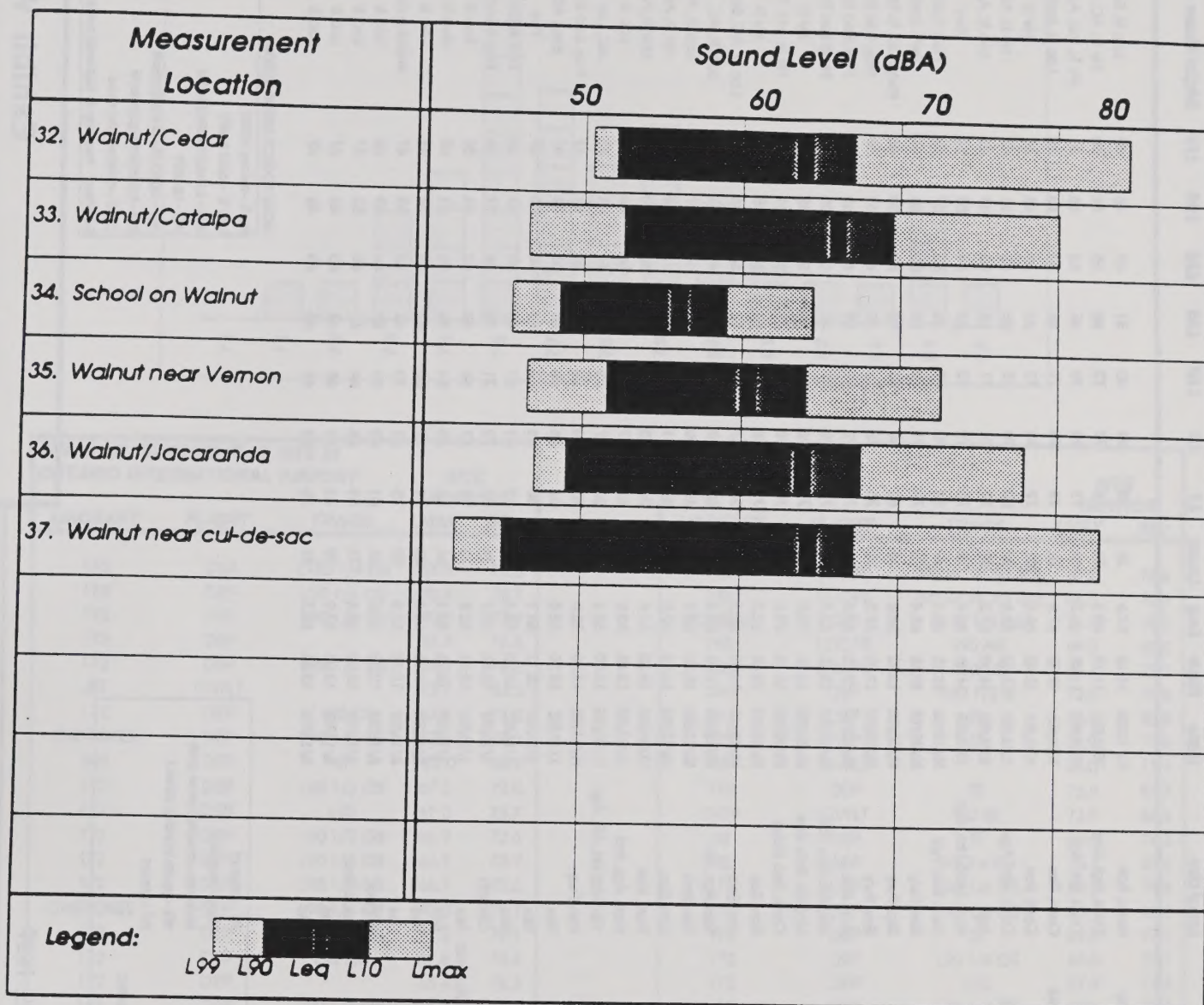
Exhibit VI A-14 (Part 1)

Summary of Ambient Measurement Results



SOURCE: MESTRE GREVE ASSOCIATES, 1989

Exhibit VI A-14 (Part 1)



SOURCE: MESTRE GREVE ASSOCIATES, 1989

Site	Location	Land Use	Date	Time	Leq	Lmax	L1	L5	L10	L33	L50	L90	L99	Major Noise Source
1	Jefferson b/w. 10th & Jacaranda	Hoep. Sch	10/10/88	11:15	57.5	76	70	64	60	51	49	46	42	Loc Tr, Sch
2	Riverside/Reservoir	Com. Agr. Res	10/6/88	11:15	68.9	81	78	74	73	68	65	54	50	Hv Tr, AC, Agr
3	Pipeline/Riverside	Com. res. Agr	10/6/88	11:45	66.7	81	77	73	70	66	62	55	51	Hv Tr, Ind, Agr, AC
4	Schaeffer b/w. 3rd & Monte Vista	Com. Res	10/6/88	12:15	67.6	82	78	74	71	66	63	54	50	Loc Tr, Ind, AC
5	Central/Anderson	Com. Res	10/6/88	12:45	68.6	81	77	74	73	68	65	55	51	Hv Tr
6	Schaeffer b/w. Benson & Oaks	Com. Res. Agr	10/6/88	13:15	68.8	84	80	75	73	66	62	51	47	Hv Tr, AC
7	Edison/San Antonio	Agr	10/6/88	14:00	67.3	83	79	74	71	63	58	47	43	Loc Tr, Agr
8	Monte Vista/Outer Hwy 71	Hwy. Mob Hm, Agr	10/6/88	14:45	66.4	78	75	72	70	66	64	55	51	Hwy
9	Eucalyptus/Hwy 71	Hwy. Res. Agr	10/10/88	15:15	65.1	77	74	70	69	65	63	57	53	Hwy, Loc Tr
10	Mason/Roswell	Res. Fwy	10/10/88	10:15	68.4	78	73	71	70	69	68	65	61	Fwy, Loc Tr
11	Harrison/Kellogg	Res. Fwy	10/10/88	10:45	54.5	64	62	59	58	54	53	50	46	Hwy, Loc Tr, Birds, AC
12	Magnolia/Banwood	Res. Fwy	10/10/88	12:00	69.2	79	76	73	72	70	68	63	59	Fwy, Loc Tr, AC
13	Williamsburg/Arlington	Fwy, Res	10/10/88	12:30	69.0	76	74	72	71	69	68	66	62	Fwy, Loc Tr, AC
14	Philadelphia/Telephone	Maj Rd. Res. Sch	10/10/88	13:15	63.7	78	71	69	67	64	62	55	51	Hv & Loc Tr, AC
15	Riverside/Monte Vista	Maj Rd. Sch. Res	10/10/88	14:15	70.0	82	78	75	73	70	68	62	58	Hv Tr
16	Central/G	Com. Res. Hoep	10/10/88	15:15	70.5	87	79	75	74	70	68	61	57	Hv Tr, Ind. Com
17	Roswell/Chino	Sch. Res	10/10/88	15:45	62.2	78	71	68	66	61	57	50	46	Hv Tr
18	Verdugo/Cartera	Res. Sch	10/12/88	11:00	62.3	80	79	67	63	57	53	46	42	Loc Tr, AC, Sch, Birds
19	Yorba at Railroad	Res. Agr. RR	10/12/88	11:45	54.4	75	65	59	57	52	49	45	41	Loc Tr, AC, Birds
20	Oaks/G	Res. Sch	10/12/88	15:30	58.7	72	68	65	63	57	54	47	43	Loc Tr, AC
21	Ramona/Walnut	Sch. Res	10/12/88	16:00	67.0	85	75	71	70	66	64	54	50	Hv Tr, AC
22	Mountain/Chino	Park, Res	11/21/88	15:30	67.4	80	76	73	72	67	63	50	46	Loc Tr, AC
23	Edison b/w. Central & 12th	Park, Agr, Ind	11/21/88	13:45	52.0	64	61	57	55	51	50	46	42	Loc Tr
24	Euclid north of Kimball	YTS, Maj Rd. AP, Agr	11/21/88	13:00	54.4	57	57	57	56	55	54	51	47	AC, Loc Tr
25	Jasmine/Tamarisk	Res. Fwy	11/21/88	11:00	55.5	68	63	60	59	55	54	51	47	Fwy, Loc Tr, AC
26	4051 Wakefield	Res	1/17/92	14:25	63.5	70	67	66	65	64	63	61	57	Fwy, AC
27	4221 Valerie Lane	Res	1/17/92	15:12	61.1	71	65	64	63	61	60	58	57	Fwy
28	Ramona/60 Fwy nw corner	Res	1/17/92	16:30	59.4	70	62	61	61	60	59	57	54	Fwy & Loc Tr.
29	Near Church	Church	1/16/92	16:58	69.7	74	73	72	71	70	69	67	66	Fwy & Loc Tr.
30	Mobile Hm Park Mountain/San Antonio	Res	1/16/92	14:41	63.8	73	68	67	66	64	63	61	58	Fwy Tr
31	Apartments west of Central	Res	1/16/92	15:45	63.1	66	66	65	64	63	63	61	60	Fwy Tr
32	Walnut/Cedar	Res	8/13/92	11:15	63.9	85	72	69	67	63	61	52	51	Loc Tr
33	Walnut/Catalpa	Res	8/13/92	11:44	66.0	80	75	71	70	66	63	53	47	Impulse noise
34	School on Walnut	School	8/13/92	12:33	56.0	65	61	60	59	57	56	49	46	Loc Tr
35	Walnut near Vernon	Res. office	8/13/92	13:00	60.4	73	69	65	64	61	59	52	47	Loc Tr
36	Walnut/Jacaranda	Res	8/13/92	13:26	63.9	78	73	69	68	64	60	49	47	Loc Tr
37	Walnut near cul-de-sac	Res	8/13/92	13:56	64.3	83	75	70	67	63	60	45	42	Loc Tr

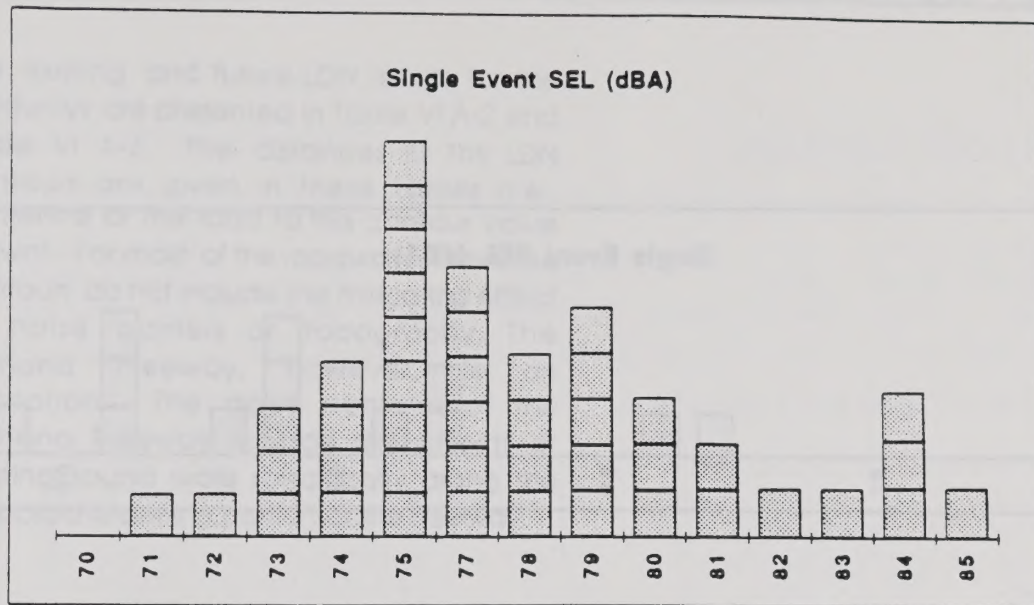
LAND USE ABBREVIATION

Com - commercial	RR - railroad
Res - residential	Hoep - hospital
Agr - agricultural	Mob Hm - mobile home park
Ind - industrial	YTS - youth training school
Sch - school	AP - airport
Maj Rd - major roadway/heavy traffic	
Fwy/Hwy - freeway or highway	

NOISE SOURCE ABBREVIATION

Hv Tr - heavy traffic
Loc Tr - local traffic
Sch - school related noise
AC - aircraft
Agr - agricultural equipment
Ind - industrial equipment
Com - commercial noise
Fwy/Hwy - freeway or highway noise

SOURCE: MESTRE GREVE ASSOCIATES, 1989



**CHINO MEASUREMENT AT SITE 24
ONTARIO INTERNATIONAL AIRPORT**

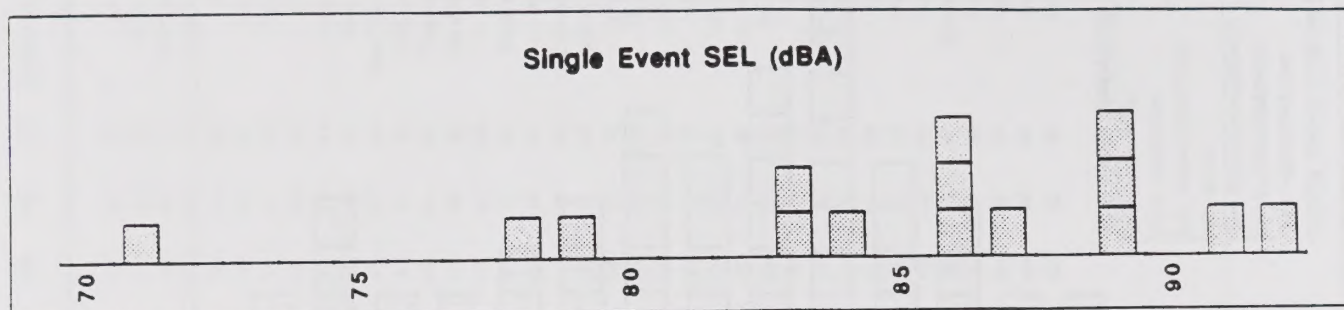
AIRCRAFT	FLIGHT	TRACK	SITE MONITOR	
			LMAX	SEL
172	DEP	L180 1/4 OS	67.9	75.3
172	DEP	L90 1/4 OS	70.8	78.1
172	DEP	L90 1/4 OS	70.9	77.9
172	DEP		67.9	74.6
172	DEP	R90 1/4 OS	69.4	76.5
JET	OVRLT		73.7	83.3
172	DEP	L180 OS	67.6	75.2
CHEROKEE	DEP	L90 1/4 OS	72.6	79.6
340	DEP	ST	782.0	84.9
172	DEP	L90 1/2 OS	67.3	72.0
172	DEP	L90	67.0	73.7
172	DEP	L90 1/2 OS	68.2	72.6
172	DEP	L90 1/4 OS	66.7	72.9
172	DEP	L90 1/2 OS	66.7	72.5
CHEROKEE	DEP	L90 1/4 OS	70.0	77.7
172	DEP	L90 1/4 OS	71.2	79.1
172	DEP	L90 OS	67.6	74.4
172	DEP		65.4	75.2
172	DEP	L90 1/4 OS	68.5	74.3
172	DEP	ST	69.5	77.1
HEL	LOOPS	R90 AS	71.7	81.5
172	DEP	L90 1/2 OS	69.8	76.8
172	DEP	L90 1/4 OS	68.8	75.9
CHEROKEE	DEP	ST	68.8	75.9

AIRCRAFT	FLIGHT	TRACK	SITE MONITOR	
			LMAX	SEL
HEL	LOOPS	R90 ACROSS STR	67.2	78.6
HEL	LOOPS	R90 ACROSS STR	68.3	78.6
CESS TW	DEP	R135 1/2 OS	71.9	78.6
HEL	LOOPS	R90 AS	69.2	80.5
HEL	LOOPS	R90 AS	68.4	78.3
340	DEP	R30 1/2 IS	72.0	78.8
172	DEP	ST	73.9	80.8
172	DEP	ST	72.9	79.9
SE	OVRLT		66.0	71.1
172	DEP	ST	75.9	83.8
DC9	OVRLT	HD SE	73.9	84.3
SE	DEP	ST	66.8	74.3
HEL	APP	FROM SW	75.1	83.6
172	DEP	L90 1/4 OS	69.5	76.8
172	DEP	L90 1/4 OS	69.1	75.3
172	DEP	ST	69.9	77.2
172	DEP	L90 1/4 OS	69.8	76.1
172	DEP	L90	67.9	74.8
172	DEP	L90 1/4 OS	69.6	77.2
172	DEP	L90 OS	68.7	75.1
172	DEP	L90 1/4 OS	68.2	75.3
172	DEP		68.5	74.7
172	DEP	L90 1/4 OS	73.2	80.0

SOURCE: MESTRE GREVE ASSOCIATES, 1989

Exhibit VI A-15

Single Event Aircraft Measurement Results - Site 24



CHINO MEASUREMENT SITE 25 ONTARIO INTERNATIONAL AIRPORT			SITE MONITOR	
AIRCRAFT	FLIGHT	TRACK	LMAX	SEL
737-200	DEP	L180 1 IS	72.7	82.5
HEL-STALLION		SB OVFLT 1/2W	68.8	77.8
DL MD80	DEP	L135 1 IS	80.3	87.3
737-3	DEP	L135 1/2 IS	71.7	78.6
737-200	DEP	135 1/2 OS	76.3	88.6
MD80	DEP	L135 OS	76.3	85.5
TWA 727	DEP	L135 1/2 IS	76.2	86.0
MD80	DEP	L135 1/4 IS	76.9	85.8
737-200	DEP	L135 1/4 IS	83.5	91.6
BIG MULTI-PROP	DEP	L180 1/2 IS	74.0	83.8
737-200	DEP	L135 OH	79.9	89.0
SHORTS 360	DEP	L45 1 IS	65.7	70.9
BUS JET	OVFLT	HD SE	71.0	83.2
UN 737-200	DEP	L90 1/2 OS	79.3	91.2
MD80	DEP	L135 1 IS	80.3	89.3

SOURCE: MESTRE GREVE ASSOCIATES, 1989

Exhibit VI A-16

Single Event Aircraft Measurement Results - Site 25

Chapter VI Noise Element Technical Appendix

The existing and future LDN results for the roadways are presented in Table VI A-2 and Table VI A-3. The distances to the LDN contours are given in these tables (i.e., centerline of the road to the contour value shown). For most of the roadways, the noise contours do not include the mitigating effect of noise barriers or topography. The Pomona Freeway, however, is an exception. The noise contours of the Pomona Freeway include the effects of existing sound walls specifically along the proposed widening portion of the freeway.

Table VI A-2
EXISTING LDN NOISE CONTOURS

Roadway	Link	ADT (x1000)	Speed	LDN @ 100 ft.	Distance from centerline of Roadway to LDN Contour (feet)		
					70 LDN	65 LDN	60 LDN
PHILLIPS AVENUE	West of Central Ave. to Benson Ave.	2.3	35	53.3	8	17	36
FRANCIS AVENUE	Pipeline Ave. to Ramona Ave.	9.6	40	61.0	25	54	116
	Ramona Ave. to Monte Vista Ave.	10.2	35	59.8	21	45	97
	Monte Vista Ave. to Central Ave.	11.4	35	60.3	22	48	104
	Central Ave. to Benson Ave.	5.1	35	56.8	13	28	61
PHILADELPHIA STREET	West of East End to W. City Limits	12.7	40	62.2	30	65	140
	East End to Roswell Ave.	12.2	40	62.0	29	63	136
	Roswell Ave. to Pipeline Ave.	8.7	40	60.5	23	50	109
	Pipeline Ave. to Ramona Ave.	10.7	40	61.4	27	58	125
	Ramona Ave. to Monte Vista Ave.	9.7	40	61.0	25	54	117
	Monte Vista Ave. to Central Ave.	12.2	40	62.0	29	63	136
	Central Ave. to Benson Ave.	24.7	40	65.1	47	101	218
	Benson Ave. to Mountain Ave.	16.9	40	63.4	36	79	169
	Mountain Ave. to San Antonio Ave.	11.9	40	61.9	29	62	134
	San Antonio Ave. to Euclid Ave.	10.7	40	61.4	27	58	125
WALNUT AVENUE	Reservoir St. to East End Ave.	4.2	35	55.9	12	25	54
	East End Ave. to Roswell Ave.	4.4	35	56.1	12	26	55
	Roswell Ave. to Pipeline Ave.	7.4	35	58.4	17	36	78
	Pipeline Ave. to Ramona Ave.	12.3	35	60.6	24	51	110
	Ramona Ave. to Monte Vista Ave.	11.5	35	60.3	23	49	105
	Monte Vista Ave. to Central Ave.	12.7	35	60.7	24	52	112
	Central Ave. to Benson Ave.	11.2	35	60.2	22	48	103
	Benson Ave. to Mountain Ave.	14.1	35	61.2	26	56	120
	Mountain Ave. to San Antonio Ave.	16.0	40	63.2	35	76	163
	San Antonio Ave. to Euclid Ave.	13.0	40	62.3	31	66	142
RIVERSIDE DRIVE	SR-71 to Reservoir St.	5.6	40	58.6	17	38	81
	Reservoir St. to Walnut Ave.	17.4	40	63.5	37	80	173
	Walnut Ave. to East End Ave.	15.0	40	62.9	34	73	156
	East End Ave. to Roswell Ave.	26.5	40	65.4	49	106	228
	Roswell Ave. to Pipeline Ave.	21.9	40	64.5	43	93	201
	Pipeline Ave. to Ramona Ave.	20.0	35	62.7	33	70	152
	Ramona Ave. to Monte Vista Ave.	19.6	35	62.6	32	70	150
	Monte Vista Ave. to Central Ave.	19.0	35	62.5	32	68	147
	Central Ave. to Benson Ave.	19.1	35	62.5	32	68	147
	Benson Ave. to Mountain Ave.	18.4	35	62.4	31	67	144
	Mountain Ave. to San Antonio Ave.	11.4	40	61.7	28	60	130
	San Antonio Ave. to Euclid Ave.	7.1	40	59.7	20	44	95

Chapter VI Noise Element Technical Appendix

**Table VI A-2
EXISTING LDN NOISE CONTOURS**

Roadway	Link	ADT (x1000)	Speed	LDN @ 100 ft.	Distance from centerline of Roadway to LDN Contour (feet)		
					70 LDN	65 LDN	60 LDN
CHINO AVENUE							
	SR-71 to Roswell Ave.	5.2	40	58.3	17	36	77
	Roswell Ave. to Pipeline Ave.	7.0	40	59.6	20	44	94
	Pipeline Ave. to Ramona Ave.	8.4	40	60.4	23	49	106
	Ramona Ave. to Monte Vista Ave.	9.5	35	59.5	20	43	92
	Monte Vista Ave. to Central Ave.	8.6	35	59.1	19	40	87
	Central Ave. to Benson Ave.	10.2	35	59.8	21	45	97
	Benson Ave. to Mountain Ave.	13.0	35	60.8	25	53	114
	Mountain Ave. to San Antonio Ave.	7.6	40	59.9	21	46	99
	San Antonio Ave. to Euclid Ave.	7.3	40	59.8	21	45	97
CHINO HILLS PARKWAY							
	SR-71 to Ramona Ave.	12.4	40	62.1	30	64	138
	Ramona Ave. to Monte Vista Ave.	10.2	40	61.2	26	56	121
	Monte Vista Ave. to Central Ave.	9.1	40	60.7	24	52	112
FREEWAY 60							
	SR-71 to East End Ave.	116.9	55	72.6	149	320	690
	East End Ave. to Ramona Ave.	114.4	55	72.5	146	316	680
	Ramona Ave. to Central Ave.	121.4	55	72.7	152	328	707
	Central Ave. to Benson Ave.	123.5	55	77.8	332	715	1542
	Benson Ave. to Mountain Ave.	123.5	55	72.8	154	332	715
	Mountain Ave. to East of Euclid Ave.	119.6	55	72.7	151	325	700
	East of Euclid Ave.	119.6	55	77.7	325	700	1509
SR-71							
	Fwy. 60 to Riverside Dr.	27.8	55	71.3	123	265	570
	Riverside Dr. to Chino Ave.	25.7	55	71.0	117	251	541
	Chino Ave. to Schaefer Ave.	23.6	55	70.6	110	237	511
	Schaefer Ave. to Edison Ave.	21.9	55	70.3	105	226	486
	Edison Ave. to Eucalyptus Ave.	25.0	55	70.9	114	247	531
	Eucalyptus Ave. to Chino Hills Pkwy.	22.7	55	70.5	107	231	498
	Chino Hills Pkwy. to Central Ave.	14.9	55	68.6	81	175	376
EAST END AVENUE							
	Phillips Blvd. to Francis Ave.	11.6	40	61.8	28	61	132
	Francis Ave. to Philadelphia St.	10.2	40	61.2	26	56	121
	Philadelphia St. to Fwy. 60	12.5	40	62.1	30	64	138
	Fwy. 60 to Walnut Ave.	19.9	40	64.1	41	88	189
	Walnut Ave. to Riverside Dr.	11.4	40	61.7	28	60	130
ROSWELL AVENUE							
	Phillips Blvd. to Francis Ave.	5.8	40	58.8	18	38	83
	Francis Ave. to Philadelphia St.	5.0	40	58.1	16	35	75
	Philadelphia St. to Walnut Ave.	10.6	40	61.4	27	58	124
	Walnut Ave. to Riverside Dr.	14.0	40	62.6	32	69	149
	Riverside Dr. to Chino Ave.	10.1	40	61.2	26	56	120
	Chino Ave. to Schaefer Ave.	7.2	40	59.7	21	44	96

Table VI A-2
EXISTING LDN NOISE CONTOURS

Roadway	Link	ADT (x1000)	Speed	LDN @ 100 ft.	Distance from centerline of Roadway to LDN Contour (feet)		
					70 LDN	65 LDN	60 LDN
PIPELINE AVENUE							
	Phillips Blvd. to Francis Ave.	9.1	40	60.7	24	52	112
	Francis Ave. to Philadelphia St.	9.9	40	61.1	26	55	118
	Philadelphia St. to Walnut Ave.	12.6	40	62.1	30	65	139
	Walnut Ave. to Riverside Dr.	7.6	40	59.9	21	46	99
	Riverside Dr. to Chino Ave.	8.0	40	60.2	22	48	103
	Chino Ave. to Schaefer Ave.	3.4	40	56.5	13	27	58
	Schaefer Ave. to Edison Ave.	6.4	40	59.2	19	41	89
	Edison Ave. to Eucalyptus Ave	6.2	40	59.1	19	40	87
RAMONA AVENUE							
	Phillips Blvd. to Francis Ave.	12.5	40	62.1	30	64	138
	Francis Ave. to Philadelphia St.	13.2	40	62.3	31	67	143
	Philadelphia St. to Fwy. 60	19.9	35	62.7	33	70	151
	Fwy. 60 to Walnut Ave.	23.7	35	63.5	37	79	170
	Walnut Ave. to Riverside Dr.	14.9	35	61.4	27	58	125
	Riverside Dr. to Chino Ave.	11.5	40	61.7	28	61	131
	Chino Ave. to Schaefer Ave.	6.6	40	59.3	19	42	90
	Schaefer Ave. to Edison Ave.	4.2	40	57.4	14	31	67
	Edison Ave. to Eucalyptus Ave.	2.7	40	55.5	11	23	50
	Eucalyptus Ave. to Chino Hills Pkwy.	2.9	40	55.8	11	24	52
MONTE VISTA AVENUE							
	Phillips Blvd. to Francis Ave.	3.7	40	56.8	13	29	61
	Francis Ave. to Philadelphia St.	7.7	40	60.0	22	46	100
	Philadelphia St. to Walnut Ave.	11.9	40	61.9	29	62	134
	Walnut Ave. to Riverside Dr.	6.9	40	59.5	20	43	93
	Riverside Dr. to Chino Ave.	8.1	35	58.8	18	39	83
	Chino Ave. to Schaefer Ave.	7.1	40	59.7	20	44	95
	Schaefer Ave. to Edison Ave.	1.3	40	52.3	7	14	31
	Edison Ave. to Eucalyptus Ave.	1.2	40	51.9	6	13	29
	Eucalyptus Ave. to Chino Hills Pkwy.	0.2	40	44.2	2	4	9
CENTRAL AVENUE							
	Phillips Blvd. to Francis Ave.	31.3	40	66.1	55	118	255
	Francis Ave. to Philadelphia St.	52.0	40	68.3	77	166	358
	Philadelphia St. to Fwy. 60	49.5	35	66.7	60	129	278
	Fwy. 60 to Walnut Ave.	54.8	35	67.1	64	138	297
	Walnut Ave. to Riverside Dr.	42.8	35	66.0	54	117	252
	Riverside Dr. to Chino Ave.	37.5	35	65.4	50	107	231
	Chino Ave. to Schaefer Ave.	29.3	40	65.8	53	113	244
	Schaefer Ave. to Edison Ave.	23.0	40	64.8	45	96	208
	Edison Ave. to Eucalyptus ave.	21.8	40	64.5	43	93	200
	Eucalyptus Ave. to Chino Hills Pkwy.	19.4	40	64.0	40	86	185
	Chino Hills Parkway to SR-71	19.4	40	64.0	40	86	185

Table VI A-2
EXISTING LDN NOISE CONTOURS

Roadway	Link	ADT (x1000)	Speed	LDN @ 100 ft.	Distance from centerline of Roadway to LDN Contour (feet)		
					70 LDN	65 LDN	60 LDN
BENSON AVENUE							
	Phillips Ave. to Francis Ave.	1.8	40	53.7	8	18	38
	Francis Ave. to Philadelphia St.	6.6	40	59.3	19	42	90
	Philadelphia St. to Walnut Ave.	13.5	35	61.0	25	54	117
	Walnut ave. to Riverside Dr.	11.0	35	60.1	22	47	102
	Riverside Dr. to Chino Ave.	4.5	35	56.2	12	26	56
	Chino Ave. to Schaefer Ave.	2.1	40	54.4	9	20	42
MOUNTAIN AVENUE							
	Philadelphia St. to Fwy. 60	22.9	40	64.7	45	96	207
	Fwy. 60 to Walnut Ave.	21.0	40	64.4	42	91	196
	Walnut Ave. to Riverside Dr.	11.8	40	61.9	29	62	133
	Riverside Dr. to Chino Ave.	8.6	40	60.5	23	50	108
	Chino Ave. to Schaefer Ave.	1.3	40	52.3	7	14	31
	Schaefer Ave. to Edison Ave.	0.2	40	44.2	2	4	9
EUCLID AVENUE							
	Philadelphia St. to Fwy. 60	26.3	40	65.3	49	105	227
	Fwy. 60 to Walnut Ave.	43.1	40	67.5	68	147	316
	Walnut Ave. to Riverside Dr.	32.8	40	66.3	57	122	263
	Riverside Dr. to Chino Ave.	28.6	40	65.7	52	112	240
	Chino Ave. to Schaefer Ave.	29.0	40	65.8	52	113	243
	Schaefer Ave. to Edison Ave.	26.9	40	65.4	50	107	231
	Edison Ave. to Eucalyptus Ave.	12.0	40	61.9	29	62	135
	South of Eucalyptus Ave.	11.0	40	61.6	27	59	127

Table VI A-3
FUTURE (2010) LDN NOISE CONTOURS

Roadway	Link	ADT (x1000)	Speed	LDN @ 100 ft.	Distance from the centerline of Roadway to LDN Noise Contour (feet)		
					70 LDN	65 LDN	60 LDN
PHILLIPS BOULEVARD							
	Reservoir St. to Ramona Ave.	7.4	35	58.4	17	36	78
	Ramona Ave. to Central Ave.	16.4	35	61.9	29	62	133
	Central Ave. to East City limits	11.6	35	60.4	23	49	106
FRANCIS AVENUE							
	West City limits to Pipeline Ave.	12.4	40	62.1	30	64	138
	Pipeline Ave. to Ramona Ave.	12.4	35	60.6	24	51	110
	Yorba Ave. to Monte Vista Ave.	17.2	35	62.1	30	64	137
	Monte Vista Ave. to Central Ave.	17.2	35	62.1	30	64	137
	Central Ave. to Benson Ave.	11.9	35	60.5	23	50	107
PHILADELPHIA STREET							
	Reservoir St. to Pipeline Ave.	13.9	40	62.6	32	69	149
	Pipeline Ave. to Ramona Ave.	13.9	40	62.6	32	69	149
	Ramona Ave. to Monte Vista Ave.	25.1	40	65.1	47	102	220
	Monte Vista Ave. to Central Ave.	16.0	40	63.2	35	76	163
	Central Ave. to Benson Ave.	32.0	40	66.2	56	120	259
	Benson Ave. to East City limits	19.7	40	64.1	40	87	187
WALNUT AVENUE							
	Reservoir St. to Pipeline Ave.	7.3	35	58.3	17	36	78
	Pipeline Ave. to Ramona Ave.	18.5	35	62.4	31	67	144
	Ramona Ave. to Monte Vista Ave.	18.9	35	62.5	31	68	146
	Monte Vista Ave. to Telephone Ave.	18.9	35	62.5	31	68	146
	Telephone Ave. to Central Ave.	18.9	35	62.5	31	68	146
	Central Ave. to Tenth St.	20.8	35	62.9	34	72	156
	Tenth St. to Benson Ave.	20.8	35	62.9	34	72	156
	Benson Ave. to Mountain Ave.	20.8	35	62.9	34	72	156
	Mountain Ave. to San Antonio Ave.	21.1	35	62.9	34	73	157
	San Antonio Ave. to East City limits	20.9	35	62.9	34	73	156
RIVERSIDE DRIVE							
	SR-71 to Pipeline Ave.	40.2	40	67.2	65	140	301
	Pipeline Ave. to Ramona Ave.	38.2	40	67.0	63	135	291
	Ramona Ave. to Monte Vista Ave.	38.2	40	67.0	63	135	291
	Monte Vista Ave. to Central Ave.	38.2	40	67.0	63	135	291
	Central Ave. to Benson Ave.	37.8	40	66.9	62	134	289
	Benson Ave. to Magnolia Ave.	37.8	40	66.9	62	134	289
	Magnolia Ave. to Mountain Ave.	37.8	40	66.9	62	134	289
	Mountain Ave. to San Antonio Ave.	30.8	40	66.0	54	117	252
	San Antonio Ave. to Fern Ave.	30.8	40	66.0	54	117	252
	Fern Ave. to Euclid Ave.	24.7	40	65.1	47	101	218
CHINO AVENUE							
	SR-71 to Pipeline Ave.	38.7	35	65.6	51	109	236
	Pipeline Ave. to Central Ave.	19.4	35	62.6	32	69	149
	Central Ave. to Cypress Ave.	27.8	35	64.1	41	88	189
	Cypress Ave. to Euclid Ave.	27.6	35	64.1	41	87	188

Table VI A-3
FUTURE (2010) LDN NOISE CONTOURS

Roadway	Link	ADT (x1000)	Speed	LDN @ 100 ft.	Distance from the centerline of Roadway to LDN Noise Contour (feet)		
					70 LDN	65 LDN	60 LDN
SCHAEFER AVENUE							
	East End Ave. to Pipeline Ave.	20.4	40	64.2	41	89	192
	Pipeline Ave. to Ramona Ave.	20.4	40	64.2	41	89	192
	Ramona Ave. to Monte Vista Ave.	26.4	40	65.4	49	106	228
	Monte Vista Ave. to Central Ave.	26.2	40	65.3	49	105	227
	Central Ave. to Benson Ave.	23.4	40	64.8	45	98	210
	Benson Ave. to Mountain Ave.	23.4	40	64.8	45	98	210
	Mountain Ave. to San Antonio Ave.	19.1	40	64.0	40	85	184
	San Antonio Ave. to Euclid Ave.	19.1	40	64.0	40	85	184
EDISON AVENUE							
	SR-71 to Pipeline Ave.	52.7	40	68.4	78	168	361
	Pipeline Ave. to Norton Ave.	32.7	40	66.3	57	122	263
	Norton Ave. to Ramona Ave.	32.7	40	66.3	57	122	263
	Ramona Ave. to Yorba Ave.	32.7	40	66.3	57	122	263
	Yorba Ave. to Monte Vista Ave.	32.7	40	66.3	57	122	263
	Monte Vista Ave. to Central Ave.	32.7	40	66.3	57	122	263
	Central Ave. to Twelfth St.	40.8	40	67.2	66	141	304
	Twelfth St. to Benson Ave.	40.8	40	67.2	66	141	304
	Benson Ave. to Mountain Ave.	40.8	40	67.2	66	141	304
	Mountain Ave. to San Antonio Ave.	30.5	40	66.0	54	116	251
	San Antonio Ave. to Euclid Ave.	32.1	40	66.2	56	120	259
EUCALYPTUS AVENUE							
	Pipeline Ave. to Ramona Ave.	31.5	40	66.1	55	119	256
	Ramona Ave. to Yorba Ave.	9.3	40	60.8	24	53	114
	Yorba Ave. to Monte Vista Ave.	9.3	40	60.8	24	53	114
	Monte Vista Ave. to Central Ave.	9.3	40	60.8	24	53	114
	Fern Ave. to Euclid Ave.	1.3	40	52.3	7	14	31
CHINO HILL PARKWAY							
	SR-71 to Ramona Ave.	62.1	40	69.1	87	187	403
	Ramona Ave. to Monte Vista Ave.	41.0	40	67.3	66	142	305
	Monte Vista Ave. to Telephone St.	24.6	40	65.0	47	101	217
	Telephone St. to Central Ave.	24.6	40	65.0	47	101	217
RESERVOIR STREET							
	Philadelphia St. to 60 Fwy.	33.6	40	66.4	58	124	268
	60 Fwy. to Riverside Dr.	10.6	40	61.4	27	58	124
EAST END AVENUE							
	Phillips Blvd. to Francis Ave.	17.3	35	62.1	30	64	138
	Francis Ave. to Philadelphia St.	17.3	35	62.1	30	64	138
	Philadelphia St. to 60 Fwy.	17.3	35	62.1	30	64	138
	60 Fwy underpass	16.6	35	61.9	29	62	134
	60 Fwy underpass to Riverside Dr.	16.6	35	61.9	29	62	134
	Riverside Dr. to Chino Ave.	18.0	35	62.3	30	66	142
	Chino Ave. to Schaefer Ave.	18.0	35	62.3	30	66	142

Table VI A-3
FUTURE (2010) LDN NOISE CONTOURS

Roadway	Link	ADT (x1000)	Speed	LDN @ 100 ft.	Distance from the centerline of Roadway to LDN Noise Contour (feet)		
					70 LDN	65 LDN	60 LDN
PIPELINE AVENUE							
	Phillips Blvd. to Francis Ave.	15.9	35	61.7	28	60	130
	Francis Ave. to Philadelphia St.	19.9	35	62.7	33	70	151
	Philadelphia St. to Walnut Ave.	19.9	35	62.7	33	70	151
	Walnut Ave. to Riverside Dr.	16.9	35	62.0	29	63	136
	Riverside Dr. to Chino Ave.	15.8	35	61.7	28	60	130
	Chino Ave. to Schaefer Ave.	15.8	40	63.1	35	75	162
	Schaefer Ave. to Edison Ave.	19.8	40	64.1	40	87	188
	Edison Ave. to Eucalyptus Ave	32.0	40	66.2	56	120	259
RAMONA AVENUE							
	Phillips Blvd. to Francis Ave.	19.1	35	62.5	32	68	147
	Francis Ave. to Philadelphia St.	18.8	35	62.4	31	68	146
	Philadelphia St. to 60 Fwy.	29.4	35	64.4	42	91	196
	60 Fwy to Walnut Ave.	24.5	35	63.6	37	81	174
	Walnut Ave. to Riverside Dr.	24.5	35	63.6	37	81	174
	Riverside Dr. to Chino Ave.	41.0	35	65.8	53	114	245
	Chino Ave. to Schaefer Ave.	41.0	40	67.3	66	142	305
	Schaefer Ave. to Edison Ave.	41.0	40	67.3	66	142	305
	Edison Ave. to Eucalyptus Ave.	38.0	40	66.9	63	135	290
	Eucalyptus Ave. to Micah Ct.	38.0	40	66.9	63	135	290
	Micah Ct. to Chino Hills Pkwy.	38.0	40	66.9	63	135	290
MONTE VISTA AVENUE							
	Phillips Blvd. to Francis Ave.	17.4	35	62.1	30	64	138
	Francis Ave. to Philadelphia St.	21.5	35	63.0	34	74	159
	Philadelphia St. to Walnut Ave.	21.5	35	63.0	34	74	159
	Walnut Ave. to Riverside Dr.	18.2	35	62.3	31	66	143
	Riverside Dr. to Chino Ave.	15.0	35	61.5	27	58	125
	Chino Ave. to Schaefer Ave.	15.0	40	62.9	34	73	156
	Schaefer Ave. to Edison Ave.	7.4	40	59.8	21	45	98
	Edison Ave. to Eucalyptus Ave.	7.4	40	59.8	21	45	98
	Eucalyptus Ave. to Chino Hills Pkwy.	7.4	40	59.8	21	45	98
CENTRAL AVENUE							
	Phillips Blvd. to Francis Ave.	48.3	40	68.0	73	158	341
	Francis Ave. to Philadelphia St.	66.5	40	69.4	91	196	422
	Philadelphia St. to 60 Fwy.	78.1	35	68.6	81	175	377
	Central Bridge to 60 Fwy.	66.5	35	67.9	73	157	338
	60 Fwy. to Walnut Ave.	57.4	35	67.3	66	142	307
	Walnut Ave. to Riverside Dr.	57.4	35	67.3	66	142	307
	Riverside Dr. to Chino Ave.	36.7	35	65.4	49	106	228
	Chino Ave. to Schaefer Ave.	36.7	40	66.8	61	132	284
	Schaefer Ave. to Edison Ave.	37.0	40	66.8	61	132	285
	Edison Ave. to Eucalyptus Ave.	43.3	40	67.5	68	147	317
	Eucalyptus Ave. to Chino Hills Pkwy.	34.3	40	66.5	58	126	271

Table VI A-3
FUTURE (2010) LDN NOISE CONTOURS

Roadway	Link	ADT (x1000)	Speed	LDN @ 100 ft.	Distance from the centerline of Roadway to LDN Noise Contour (feet)		
					70 LDN	65 LDN	60 LDN
BENSON AVENUE							
	Phillips Ave. to Francis Ave.	16.8	35	62.0	29	63	135
	Francis Ave. to Philadelphia St.	22.9	35	63.3	36	77	166
	Philadelphia St. to 60 Fwy.	22.9	35	63.3	36	77	166
	60 Fwy. to Walnut Ave.	21.2	35	63.0	34	73	158
	Walnut Ave. to Riverside Dr.	21.2	35	63.0	34	73	158
	Riverside Dr. to Chino Ave.	14.9	35	61.4	27	58	125
	Chino Ave. to Schaefer Ave.	14.9	35	61.4	27	58	125
MOUNTAIN AVENUE							
	Philadelphia St. to Walnut Ave.	44.0	40	67.6	69	149	320
	Walnut Ave. to Riverside Dr.	34.0	40	66.5	58	125	270
	Riverside Dr. to Chino Ave.	23.3	40	64.8	45	97	210
	Chino Ave. to Schaefer Ave.	23.3	40	64.8	45	97	210
	Schaefer Ave. to Edison Ave.	14.2	40	62.7	32	70	151
SAN ANTONIO AVENUE							
	Philadelphia St. to 60 Fwy.	7.4	35	58.4	17	36	78
	60 Fwy. to Walnut Ave.	7.7	35	58.6	17	37	80
FERN AVENUE							
	Riverside Dr. to Chino Ave.	7.4	35	58.4	17	36	78
	Chino Ave. to Edison Ave.	7.7	35	58.6	17	37	81
	Edison Ave. to Eucalyptus Ave.	6.5	35	57.8	15	33	72
EUCLID AVENUE							
	Philadelphia St. to 60 Fwy.	54.0	45	69.7	96	207	446
	60 Fwy. to Riverside Dr.	52.6	45	69.6	94	203	438
	Riverside Dr. to Edison Ave.	43.0	45	68.7	82	178	383
	Edison Ave. to Kimball Ave.	31.2	50	68.5	79	170	367
	Kimball Ave. to SR-71	27.8	50	68.0	73	158	340
STATE ROUTE 71							
	South of 60 Fwy. to Chino Ave.	136.5	55	78.2	355	765	1648
	South of Chino Ave. to Edison Ave.	120.2	55	77.7	326	703	1514
	South of Edison Ave. to Chino Hills Pkwy.	89.1	55	76.4	267	575	1240
	South of Chino Hills Pkwy. to E. City Limits	58.2	55	74.5	201	433	933
60 FREEWAY							
	East of Reservoir St.	151.7	55	73.7	177	381	821
	East of Ramona Ave.	165.2	55	74.1	187	403	869
	Ramona Ave. to Benson Ave.	169.1	55	79.2	409	882	1901
	Benson Ave. to Mountain Ave.	169.1	55	74.2	190	409	882
	Mountain Ave. to Euclid Ave.	167.5	55	74.1	189	407	877

Glossary of Terms

A-Weighted Sound Level. The sound pressure level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear. A numerical method of rating human judgment of loudness.

Ambient Noise Level. The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Community Noise Equivalent Level (CNEL). The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five (5) decibels to sound levels in the evening from 7 p.m. to 10 p.m. and after addition of ten (10) decibels to sound levels in the night before 7 a.m. and after 10 p.m.

Day-Night Average Level (LDN). The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of ten (10) decibels to sound levels in the night before 7 a.m. and after 10 p.m.

Decibel (dB). A unit for measuring the amplitude of a sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micro-pascals.

dB(A). A-weighted sound level (see definition above).

Equivalent sound Level (LEQ). The sound level corresponding to a steady noise level over a given sample period with the same amount of acoustic energy as the actual time varying noise level. The energy average noise level during the sample period.

Frequency. The number of times per second

that a sound pressure signal oscillates about the prevailing atmosphere pressure. The unit of frequency is the hertz. The abbreviation is Hz.

Intrusive Noise. That noise which intrudes over and above the ambient noise at a given location. The relative intrusiveness of a sounds depends upon its amplitude, duration, frequency, time of occurrence, and tonal or informational content as well as the prevailing ambient noise level.

L(n). The A-weighted sound level exceeded during a certain percentage of the sample time. For example, L10 is the sound level exceeded 10 percent of the sample time. Similarly L50, L90, L99, etc.

Noise. Any unwanted sound or sound which is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying. The State Noise Control Act defines noise as "...excessive undesirable sound...".

Noise Attenuation. The ability of a material, substance, or medium to reduce the noise level from one place to another or between one room and another. Noise attenuation is specified in decibels.

Noise Exposure Contours. Lines drawn around a noise source indicating constant or equal level of noise exposure. CNEL and LDN are typical metrics used.

Noise Referral Zones. Such zones are defined as the area within the contour defining a LDN level of 60 decibels. It is the level at which either State or Federal laws and standards related to land use become important and, in some cases, preempted local laws and regulations. Any proposed noise sensitive development which may be impacted by a total noise environment of 60 dB LDN or more should be evaluated on a project specific basis.

Noise Sensitive Land Use. Those specific land uses which have associated indoor and/or outdoor human activities that may be subject to stress and/or significant interference from noise produced by community sound sources. Such human activity typically occurs daily for continuous periods of 24 hours or is of such a nature that noise is significantly disruptive to activities that occur for short periods. Specifically, noise sensitive land uses include: residences of all types, hospitals, rest homes, convalescent hospitals places of worship and schools.

Percent Noise Levels. See L(n).

Sound Level (Noise Level). The weighted sound pressure level obtained by use of a sound level meter having a standard frequency-filter for attenuating part of the sound spectrum.

Sound Level Meter. An instrument, including a microphone, an amplifier, an output meter, and frequency weighting networks for the measurement and determination of noise and sound levels.

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